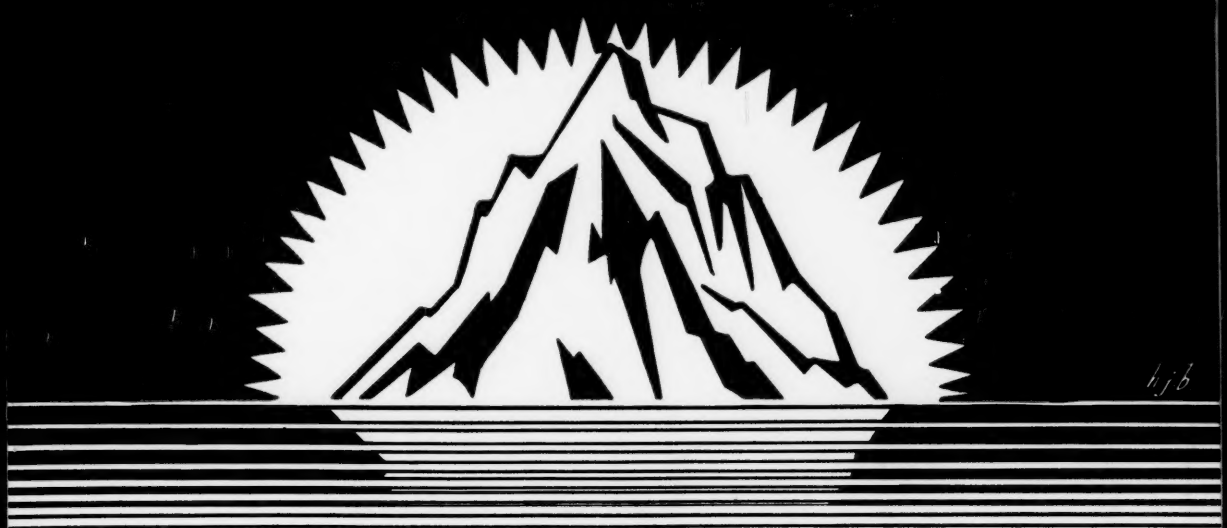
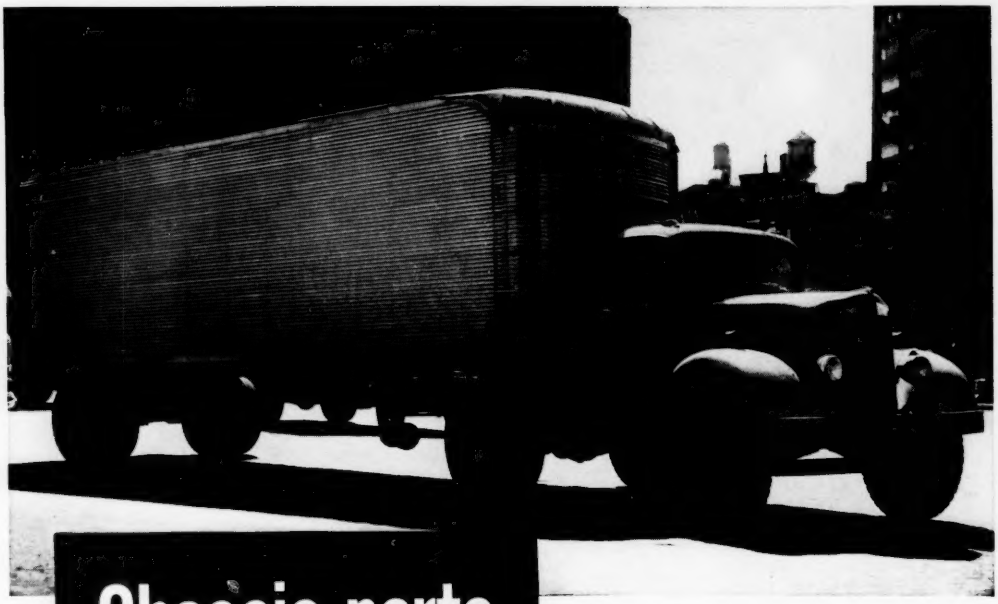
ICE AND Refrigeration



PUBLISHED BY NICKERSON & COLLINS CO., CHICAGO - NEW YORK

58th YEAR ★ MARCH, 1949



Chassis parts last longer

. . . and maintenance costs go down when you use the longer-lasting lubricant—Texaco Marfak

TEXACO *Marfak* is the world-famous chassis lubricant that protects chassis parts for a *thousand miles or more.* It resists squeeze-out, pound-out and wash-out — guards chassis parts against rust and wear, makes them last longer, assures smoother operation, keeps chassis maintenance costs consistently low.

Texaco Marfak Heavy Duty — for use in *wheel bearings* — also provides longer-lasting protection with fewer applications. It seals out dirt and moisture, and seals itself *in* the bearings — assuring safer braking. *Texaco Marfak Heavy Duty* requires no seasonal repacking.

Reduce your fleet operating costs by using Texaco products and Lubrication Engineering Service. Call the nearest of the more than 2300 Texaco Wholesale Distributing Plants in the 48 States, or write The Texas Company, 135 E. 42nd St., New York 17, N. Y.

LONGER LIFE FOR ENGINE PARTS — *Texaco D-303 Motor Oil* is fully detergent and dispersive — *keeps engines clean.* It prolongs the life of all engine parts, assures smoother, more powerful operation, reduces both fuel and maintenance costs. Use it for greater engine efficiency and economy.

MORE THAN 300 MILLION POUNDS OF TEXACO MARFAK HAVE BEEN SOLD!

TEXACO

TEXACO Lubricants and Fuels

FOR ALL TRUCKING EQUIPMENT

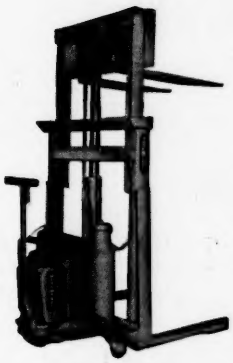
Tune in . . . TEXACO STAR THEATRE presents MILTON BERLE every Wednesday night. METROPOLITAN OPERA broadcasts every Saturday afternoon.

ICE AND REFRIGERATION, Nickerson & Collins Co., Publishers, 433-435 N. Waller Ave., Chicago 44, Ill. Published monthly, Vol. 116, No. 3, March, 1949. Entered as second-class matter August 8, 1891, Chicago, Ill., under the Act of March 3, 1879. Additional entry at Beloit, Wis., April 20, 1948. Copyright 1949. Subscription in the U. S. $3.00 per year; other countries $4.00.

See WHY MOTO-TRUCS pay off in cold storage operation

Write for New BULLETIN No. 49

SEE WHY—



MOTO-TELESCOPIC HI-LIFT TRUCK

2,000 lb. capacity, 80" lift, fully extended. 66" collapsed position. Operates in 6 ft. aisle with a 36" x 48" pallet. Made to handle any type and size of pallet.

Moto-Trucs are up to 15 inches shorter, turn in smaller radius.

Moto-Trucs operate in narrower aisles and increase storage space.

Moto-Trucs are easiest and most convenient to operate. Moto-Trucs insure safety to both operator and load.

Moto-Trucs give long service with amazingly little maintenance cost.

Moto-Trucs are the best investment.

8 pages of illustrations, facts and figures

FREE

FOR TOPS IN Quality USE

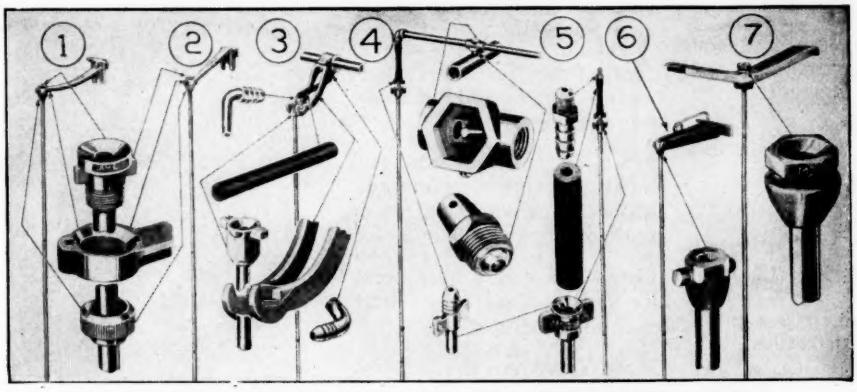
MARTOCELLO

EQUIPMENT

"Always Dependable"

Make CLEAR, CLEAN, QUALITY *Ice*

by using trouble-free, precision made and always interchangeable MARTOCELLO Clear Ice Making Systems and Supplies. It is most essential to the Ice Industry



THE ILLUSTRATION ABOVE SHOWS THE FOLLOWING CLEAR ICE MAKING SYSTEMS

1. MARTOCELLO SELF-CENTERING DROP TUBE BRACKET, Offset Form
2. MARTOCELLO SELF-CENTERING DROP TUBE BRACKET, Straight Form
3. MARTOCELLO SERIES DROP TUBE BRACKET
4. DOUBLE BRACKET SYSTEM ASSEMBLY
5. SERIES DROP TUBE ASSEMBLY
6. GALVANIZED STEEL TRUNNION TYPE BRACKET ASSEMBLY
7. GALVANIZED STEEL SADDLE BRACKET ASSEMBLY

Everything for the Ice Industry

Jos. A. Martocello & Co. — MOLDING ICE THE BEST

229-231 NORTH 13th STREET
PHILADELPHIA 7, PA.

"Serving the Ice Industry Since 1916" . . *"There is no Substitute for* MARTOCELLO QUALITY"

ARE YOU PREPARED

FOR THE 1949 SEASON?

BE SURE

AT MARTOCELLO

HEADQUARTERS

for PARTS and SUPPLIES

Reduced Prices

MARTOCELLO GOES OUT IN FRONT TO KEEP PRICES DOWN AT THE LOWEST POSSIBLE LEVEL AND MAINTAIN THEM.

Quality

TO HAVE AN EFFICIENT ICE PLANT YOU MUST HAVE THE BEST EQUIPMENT. THEREFORE LOOK TO MARTOCELLO FOR QUALITY PLUS LOW COST.

Prompt Deliveries

FROM OUR EXTENSIVE STOCK ON AERATING EQUIPMENT AND SUPPLIES, WE CAN SHIP IMMEDIATELY ANY QUANTITY YOU REQUIRE.

Compare

LET US QUOTE YOU OR SEND YOUR ORDERS IN NOW. COMPARE QUALITY AND PRICE AND SEE WHY MARTOCELLO WINS OUT EVERY TIME.

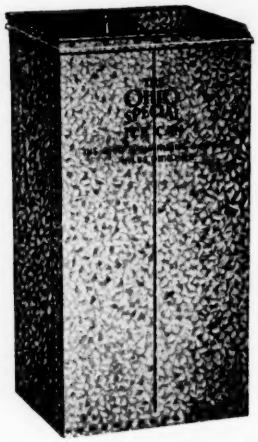
Check Your Requirements

Air Agitating Systems and Supplies
Air Blowers and Compressors
Air Conditioning Spray Nozzles
Air Controlling Valves
Ammonia Gauges and Thermometers
Ammonia Charging Hose
Brine Pumps, Brine Circulators
Can Baskets and Can Fillers
Can Covers and Frame Work
Clear Ice Making Systems
Cold Storage Doors
Cooling Tower Nozzles
Condenser Water Distributors
Core Fillers, Suckers and Pumps
Dip Tanks and Can Dumps
Drop Tubes and Fittings
Filters and Filtering Material
Ice Cans, Can Fillers and Chutes
Ice Cubers and Ice Cube Cartons
Ice Cube Cutting Machines
Ice Picks, Tools and Scales
Pumps: Air, Brine and Water
Rubber Tubing and Hose
Sized Ice Machine, Ice Crushers
Strainers: Air and Water
Spray Nozzles and Spray Ponds
Valves and Fittings, Etc.

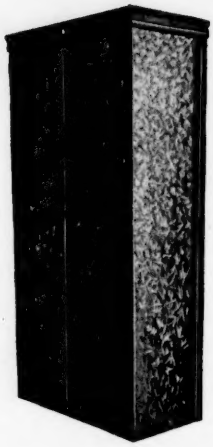
Jos. A. Martocello & Co. — 229-231 NORTH 13th STREET PHILADELPHIA 7, PA.

"Serving the Ice Industry Since 1916" . . *"There is no Substitute for* MARTOCELLO QUALITY"

OHIO SPECIAL ICE CANS

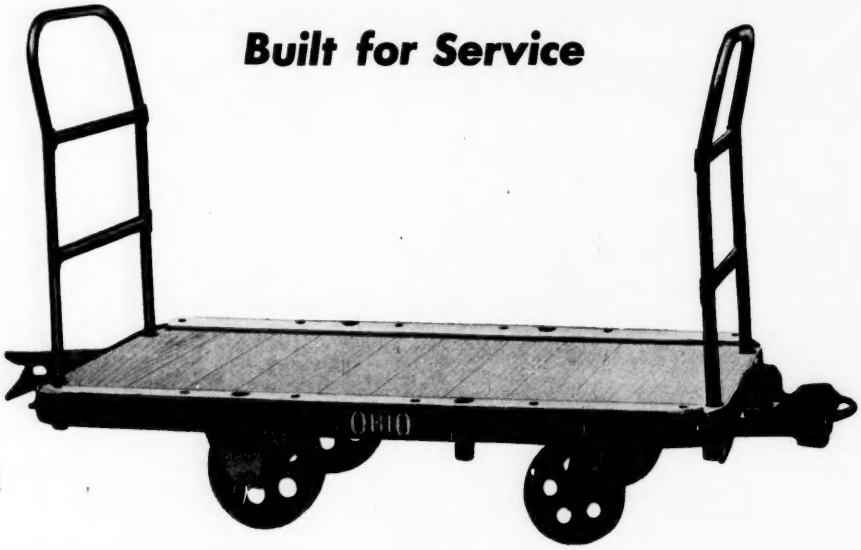


Double
Riveted
or
Welded



OHIO No. 2001 TRAILERS

Built for Service



THE OHIO GALVANIZING & MFG. CO.
NILES *Established 1902* OHIO

POLAR *Automatic-Refrigerated* ICE STATIONS *for Merchandising Packaged Ice*

BLOCKED – SIZED – CUBED *Ice*

• 2 EXCLUSIVE FEATURES •

•

Aircraft ALUMINUM CONSTRUCTION!

•

COIN MECHANISM ADDS CHANGE!

•

You'll make more sales—AUTOMATICALLY—and thus increase your profits when you have a POLAR Ice Vending Station working for you 24 hours a day. The coin mechanism counts the money deposited by the customer making possible several combinations of coins for one sale. For example, on a 30c sale the customer can deposit a quarter and a nickel; 3 dimes; 6 nickels or 2 dimes and 2 nickels. Similar combinations of silver coins are possible for sales of varying amounts.

The coin and vending mechanism of a Polar Station are virtually foul-proof. SLUGS ARE REJECTED—coins are returned when conveyor belt is empty. The DUAL CONTROL DOES NOT PERMIT OVERPAYING IN ICE!

Polar Ice Vending Stations are built of .051 aircraft aluminum inside and out! Aluminum is WEATHERPROOF . . . FIREPROOF . . . DURABLE AND ATTRACTIVE. Always looks bright and new. There is no paint to chip or peel off—so there is NO UPKEEP!

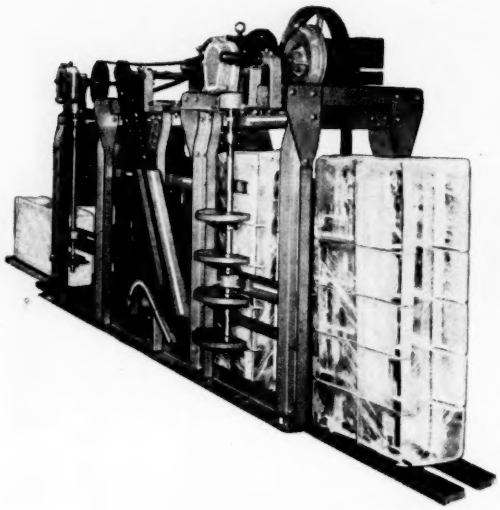
Polar Ice Vending Stations are insulated with 6½" of insulation board and board-form Fiberglas—completely sealed. The refrigeration unit has SURPLUS POWER, is GUARANTEED TO HOLD ZERO TEMPERATURE AT 95° Outside. The proper temperature for ice storage is 26° so you are assured LOW COST OPERATION. And at low temperature storage your profits can't melt away for the ice is always dry.

Write Today for Free Bulletin

REFRIGERATION ENGINEERING COMPANY

211 Foshay Tower *"Pioneers in Refrigeration"* **Minneapolis 2, Minn.**

Ready TO SERVE YOU NOW...



The 1949 Ice Season is at hand. If your ice plant is to operate efficiently and economically this season—there's no time to be lost in putting it in good condition.

A worn out, obsolete scoring machine can be an abominable bottle-neck. Why take a chance?

Perfection is ready to furnish you IMMEDIATELY the latest word in ice scoring machines . . . a machine that will exactly suit your plant and score your ice exactly as you desire.

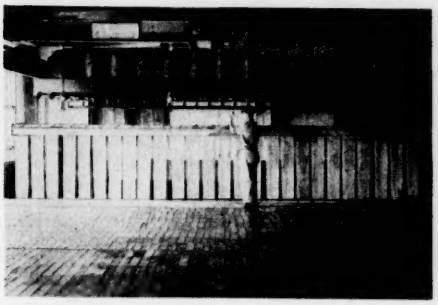
Tremendous stocks of maintenance parts for your old scoring machines are on hand for shipment the day your order comes in.

Perfection

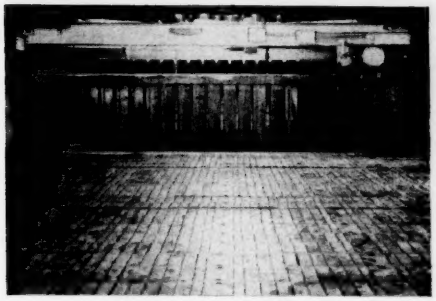
ICE SCORING MACHINE COMPANY

Phone 3-1258
P.O. Box 2140
FORT WORTH, TEXAS

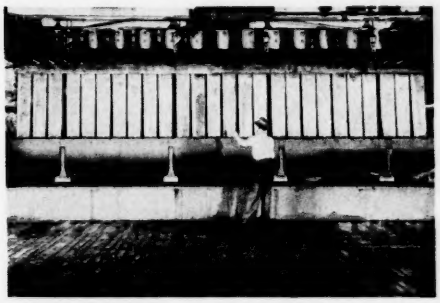
Right: The One-Man One-Shift System of the Polar Ice and Fuel Co., at Indianapolis, Makes 42 Tons Daily →



Polar Ice & Fuel Company's 70-Ton System at New Albany



62-Ton Plant of Serv-ice and Coal Company at Columbus



46-Ton 1-Man Plant of Muncie Ice & Coal Company

SIX 1-MAN ICE PLANTS NOW OPERATING IN INDIANA

The world's first large ice-making system to be operated by one man, working only one shift, was started at Indianapolis in February, 1945. This (shown above) has made 42 tons of ice every day for over 1440 consecutive days—a record, and equal to over a billion ice cubes!

Five other Frick 1-man plants have since been built, at Muncie, New Albany, Columbus, Indianapolis, and South Bend. The largest of these makes 108 tons daily. All operate with remarkable economy. A 100-ton 1-man Frick plant is also under construction at El Paso, Texas.

If you need ice-making equipment, get estimates from the largest builder: write, phone or visit your nearest Frick office:

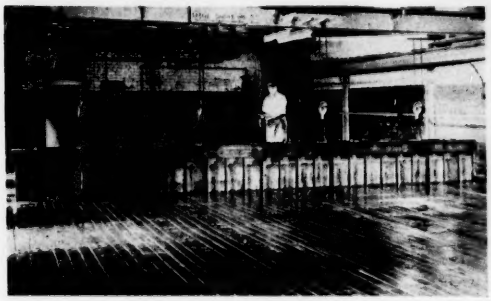
FRICK BRANCH OFFICES

Atlanta 3, Ga.
Boston 20, Mass.
Charlotte 2, N. C.
Cincinnati 2, Ohio
Dallas 1, Texas
Kansas City 6, Mo.
Los Angeles 14, Calif.
Memphis 3, Tenn.
New Orleans 12, La.
New York City 17
Oklahoma City 3, Okla.
Palatka, Florida
Philadelphia 7, Penna.
Pittsburgh 22, Penna.
Saint Louis 2, Mo.
Washington 5, D. C.

DEPENDABLE REFRIGERATION SINCE 1882

FRICK CO.

WAYNESBORO, PENNA. U.S.A.



52-Ton "Zero" Plant, Indiana Ice & Fuel Company, Indianapolis

South Bend Brewing Company's 108-Ton Tanks

Pipe Coils • Direct Expansion Water Coolers • Shell and Tube Condensers • Industrial Unit Coolers • Oil Separators • Liquid Receivers

Acme DRY-EX WATER CHILLERS

ACME DRY-EX heads are cast steel. Model shown is DXG—available in a wide variety of sizes and types.

FOR USE WITH AMMONIA OR FREON

ACME DRY-EX Water Chillers are designed for chilling water in large volume. The result of years of experience, they assure maximum performance and require minimum service. For use with direct expansion ammonia, as well as Freon air conditioning systems, and other industrial applications, ACME DRY-EX Water Chillers incorporate many outstanding features and improvements. Heads are cast steel, shell is seamless steel tubing. Tubes are seamless copper, with steel and alloy tubes available for special applications. Designed to comply with ASME codes. Refrigerant space is in tubes and heads—water space is in the shell. In many installations, savings in initial refrigerant charge will more than offset the additional chiller cost over that of flooded units. To be safe, specify ACME—select the proper type and size from our catalog No. 631.

ACME PRODUCTS

ACME INDUSTRIES, INCORPORATED

JACKSON, MICHIGAN

Representatives in Principal Cities

30TH ANNIVERSARY OF CONTINUOUS SERVICE TO THE REFRIGERATION INDUSTRY

Mundet Corkboard is a Money-Saving HEAT & MOISTURE BARRIER

Perishables in this cold storage room are protected by Mundet Corkboard in floors, walls and ceiling. Inset shows Corkboard being installed in ceiling of freezer. All joints are vapor-sealed.

Mundet Corkboard is a time-proved heat and moisture barrier . . . serving at top-efficiency in hundreds of quick freezing and frozen food locker plants, in cold storage rooms and food processing plants. Whether you have small or large facilities for low temperature, you need Mundet Corkboard for these dollar-saving advantages:

LOW CONDUCTIVITY Mundet Corkboard provides the most efficient barrier to heat transfer due to its internal cellular structure of sealed dead-air spaces.

STRUCTURAL STABILITY The cellular structure of Mundet Corkboard maintains its shape and characteristics under rigorous conditions of service.

NON-ABSORBENCE Mundet Corkboard has no capillary attraction. This nature-made quality avoids absorption of dampness and odors. There is no swelling or loss of insulating value from moisture infiltration.

EASE OF INSTALLATION Mundet Corkboard is light in weight despite its strength. It cuts easily, readily holds nails or skewers; bonds with cement, asphalt or paint.

LONG-LIFE There is only one way to figure insulation cost. That is the over-all 'life-expectancy' of the material. Here, again, Corkboard is the choice, with thousands of installations to prove its durable service.

The best insulation requires competent installation. You benefit from the experienced erecting services that are offered by Mundet branch offices. Corkboard is available for prompt shipment from nearby warehouses. Send coupon for copy of Mundet Cork Manual. Prepared in convenient filing size, with cork specification data.

MUNDET CORK CORPORATION
Insulation Division
7101 Tonnelle Ave., North Bergen, N. J.

Please send copy of Mundet Cork Insulation Catalog in handy reference size.

Name.....

Company.....

Address.....

City..... *Zone*..... *State*..... QF2

Mundet district offices are located in these cities:

ATLANTA
339-41 Elizabeth Street, N.E.

BOSTON
57 Regent St., North Cambridge 40

CHARLOTTE, N. C.
206 E. Stonewall St.

CHICAGO 16
2601 Cottage Grove Avenue

CINCINNATI 2
427 West 4th Street

DALLAS 1
601 Second Ave.

DETROIT 21
14401 Prairie Street

HOUSTON 1
Commerce and Palmer Streets

INDIANAPOLIS
15 E. Washington St.

JACKSONVILLE 6, FLA.
800 E. Bay St.

KANSAS CITY 7, MO.
1428 St. Louis Avenue

LOS ANGELES
(Maywood)
6116 Walker Avenue

NEW ORLEANS 16
315-25 N. Front Street

PHILADELPHIA 39
856 N. 48th Street

ST. LOUIS 4
2415 South Third Street

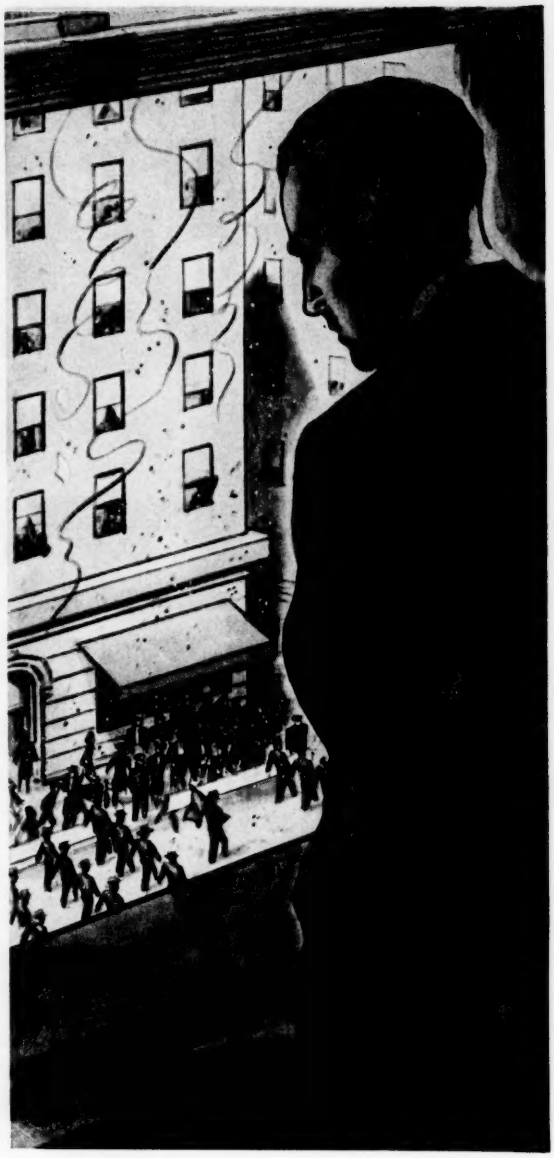
SAN FRANCISCO 7
440 Brannan Street

In Canada:
Mundet Cork & Insulation, Ltd.
35 Booth Avenue, Toronto

Write us for name of our nearest representative if there is no Mundet office in your city.

MUNDET
CORK INSULATION

MEMO TO PRESIDENTS WHO WATCHED THE BAND GO BY!



HERE'S ONE parade that isn't "all over but the shouting" after the band has passed. It's the Payroll Savings Plan for the regular purchase of U. S. Security Bonds by employees.

Though the formal spring campaign to sell Bonds is over, any company can still move forward with the parade. Right now thousands of companies are putting *additional push* behind their Payroll Savings Plans. Managements of many companies that have not yet participated are *now installing* the Plan.

It's a "look-ahead" plan, that benefits employee, company, and nation. Every $3 invested in Bonds pay $4 at maturity. Personnel records in the plants with active P. S. P. programs show improved employee attitudes—evidenced by less absenteeism and fewer accidents—as the individual's sense of security grows with Bond purchases. And every Security Bond dollar built up in the Treasury retires a dollar of the national debt that is potentially inflationary. It means less bidding-up of prices. Moreover, Bond buyers are better citizens because they have a tangible stake in the nation's future.

It's just as easy to take action now as when the campaign was at its height. Just call your Treasury Department's State Director, Savings Bonds Division, and ask for the material that helps to get a Payroll Plan started or to keep it rolling.

The Treasury Department acknowledges with appreciation the publication of this message by

ICE AND REFRIGERATION

This is an official U. S. Treasury advertisement prepared under the auspices of the Treasury Department and the Advertising Council.

"Now I am *really* selling PROCESSED ICE!"

BUILDS SALES . . . "Paper bags are the biggest boost to processed ice sales ever developed," say ice companies. For the first time, housewives can buy a *package* of clean processed ice, and so have enough cubed ice for drinks and shaved ice for those tempting food dishes.

SANITARY . . . Union's *One-Trip* Paper Ice Bags really protect against contamination. Just what you and your customers have wanted for years! When filled, Union Paper Ice Bags are quickly closed with a wire tie that locks out dirt and dust

ADAPTABLE TO PRESENT EQUIPMENT . . . Union Paper Ice Bags are custom-made to fit any type hopper or machine. Easy to work with. No special training needed to convert workers from old-style re-usable containers to Union One-Trip Paper Ice Bags.

TRADE MARK UNION

ONE TRIP

UNION PAPER ICE BAGS

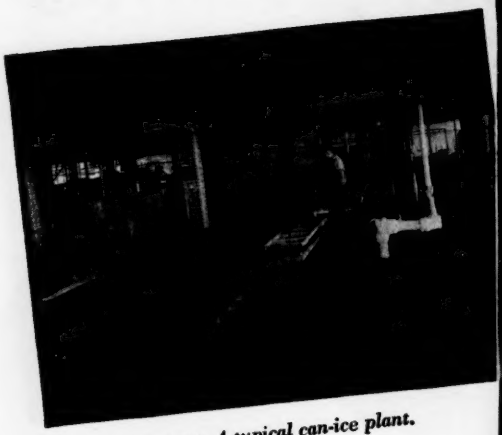
A PRODUCT OF THE

UNION BAG & PAPER CORPORATION

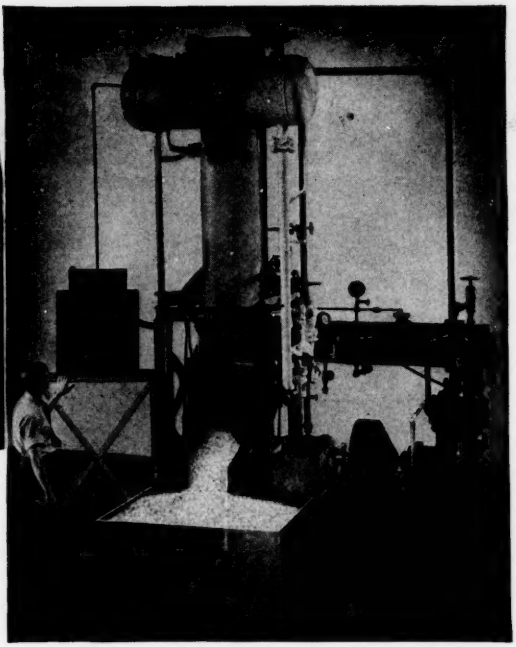
Woolworth Bldg., New York 7, N. Y.

Bags of Kraft, Transparent Films, Waxed Paper, Glassine Laminated

WET-STRENGTH PAPER has tremendous strength even when soaking wet . . . thanks to a water repellent resin that binds the fibres firmly together.



YESTERDAY: *A typical can-ice plant.*



TODAY: *A typical Vogtice plant. It occupies only 10% of the area required by a can-ice plant of equal capacity.*

Times have changed in ICE MAKING

MORE Ice from LESS Plant . . . that's the story of Vogtice* and the modern Tube-Ice Machine!

Employing direct expansion of the refrigerant, the *Automatic* Tube-Ice Machine eliminates brine tanks, brine circulators, ice cans, can fillers, dip tanks, dumpers, cranes, cubers and crushers, together with the power, labor and maintenance for such equipment, common to other systems.

Yes, times have changed Mr. Ice Manufacturer . . . and it's time now to modernize with Vogtice* and avoid the high cost production methods of yesterday.

WRITE FOR BULLETIN TI-2 ⟶

A complete description of the Vogt Automatic Tube-Ice Machine, the process and the product, Vogtice, will be found in this booklet, together with applications in varied fields of food production and distribution.

*Vogtice, frozen from RAW water, is a clear hard ice of superior quality. Either "cylinder" or "crushed" ice may be had from the same freezer by simple adjustment.

MAKE IT PAY THE VOGTICE WAY

AUTOMATIC

Vogt TUBE-ICE MACHINE

Patent Nos. 2,200,424; 2,239,234; and 2,396,308 (Other Patents Pending)

HENRY VOGT MACHINE CO., INC., LOUISVILLE 10, KY.

BRANCH OFFICES: NEW YORK • PHILADELPHIA • CLEVELAND • CHICAGO • ST. LOUIS • DALLAS

in almost any plant—

FILT-R-STIL* WATER DEMINERALIZERS

Eliminate core-pulling! Increase profits!

NOT SINCE ICE COVERED THE EARTH has there been anything like the **FILT-R-STIL** water demineralizer that renders core-pulling as obsolete as a stone axe. With demineralized water and *no core-pulling*, ice manufacturers are turning out ice that is at least as good, and usually better, than that produced *with core-pulling!*

"JUST FILL UP THE TANKS, TURN ON THE AIR, AND LET 'EM FREEZE" is the modern way of doing it with a **FILT-R-STIL** Demineralizer. And, as any ice man who has tried it boasts, freezing time and, usually, brine temperatures, go *down*, production rates go *up!*

BEST OF ALL, a **FILT-R-STIL** Demineralizer is so economical to operate (a few cents per ton, usually), it quickly pays for itself . . . in lower labor and power costs, added production and sales.

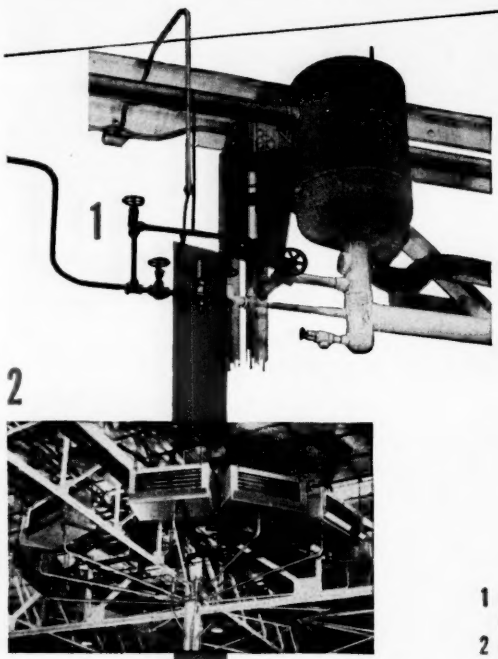
Cut Your Ice-Making Costs to the Core. Investigate **FILT-R-STIL** Demineralization. Learn what it can do for *you* in *your* plant. Start the ball rolling by writing for full information now. If you want more details, just ask us for them. And if you want quick action—an estimate immediately, with no obligation whatsoever—send us an analysis of your water (or a one-gallon sample), and tell us how many tons a day you want to freeze. Write today . . . for a more profitable tomorrow! *Reg. U. S. Pat. Off.

AMERICAN Cyanamid COMPANY
ION EXCHANGE PRODUCTS DEPARTMENT
30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

the world's largest refrigerated warehouse

equipped with ALCO VALVES!

The Alford Warehouse, Dallas; 7,500,000 cubic feet of cold storage, and 8,000,000 cubic feet of air conditioned storage.



1

2

A wide range of cold storage temperatures will be efficiently handled by:

- **M8 SOLENOID VALVES** controlled by
- **J5 FLOAT SWITCHES** on liquid lines;
- **EPR 600 Series EVAPORATOR PRESSURE REGULATORS** controlled by
- **D922 TEMPERATURE PILOTS** on suction lines.

However large or small, simple or complex your requirements may be . . . you'll find the right answer in ALCO's *complete line* of refrigerant controls. Your ALCO wholesaler will be glad to advise you.

1 ALCO J5 Float Switch and M8 Solenoid Valve controlling flow of liquid ammonia into surge drum.

2 Typical cluster of ceiling blower coils with ALCO Controls on both liquid and suction lines.

Desi[illegible]d Manufacturers of T[illegible]matic Expansion Valv[illegible]porator Pressure Regu[illegible] Solenoid Valves; Float [illegible] Float Switches.

3779

ALCO VALVE CO.

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SPECIFICATIONS ON ICE STATION

ALL AIRCRAFT ALUMINUM CONSTRUCTION: Outside structure, .051 aluminum; dead air space; .032 Aircraft aluminum; permanently secured Fibre glass insulation; inside structure, .051 Aircraft aluminum. Vapor sealed throughout.

REFRIGERATOR DOOR: .051 Aircraft aluminum construction well insulated with batts of Fibre glass.

REFRIGERATION: 1½ H. P. condensing unit with banks of vacuum cold plate evaporators (more effective than coils). Guaranteed to maintain below freezing temperature with outside temperatures of 100°.

COIN MECHANISM: Lever operated, positive delivery, rejects slugs; also returns money when machine is empty.

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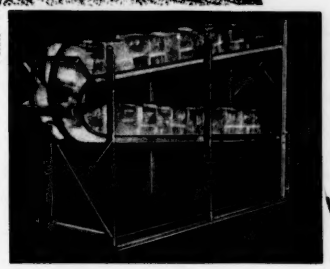
Vends Blocked Cubed and Sized Ice

The Frigid-Vend Ice Station is in a class by itself because of its all Aircraft aluminum construction. Lighter in weight, it comes to you already assembled and mounted on skids ready to slide onto foundation.

Vending mechanism is positive and fool-proof. Vending lever is clutch operated, preventing breakage of handle and damage to mechanism. A customer, after insertion of money, can receive only one unit of ice at a time. Jackpot operation is impossible. Coin mechanism rejects slugs and returns money when machine is empty. In appearance, and in profitable operation, a complete Frigid-Vend Ice Station is all you could ask for.

The Station will vend four kinds of ice, two sizes of blocked ice as well as cubes or crushed ice in bags or packages. Or if you prefer you can vend any smaller combination of these four types.



GRAVITY ACTION DOUBLE DECK ICE BLOCK VENDORS

All steel construction with stainless steel covered tracks. ½ H. P. motor with gear head operates tripper bars during vending operation.

Capacity: 25 lb. ice blocks model—27 or 54 blocks
50 lb. ice blocks model—19 or 38 blocks

FRIGID-VEND BAG, PACKAGE AND ICE BLOCK VENDORS CAN BE PURCHASED SEPARATELY FOR INSTALLATION IN ANY ICE STORAGE ROOM.

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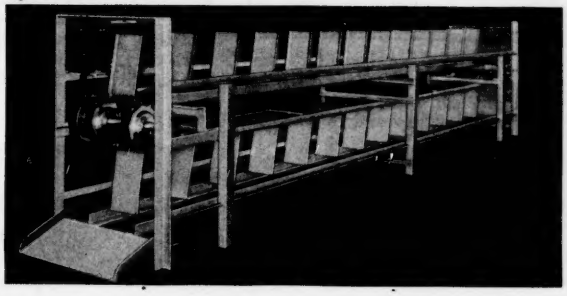
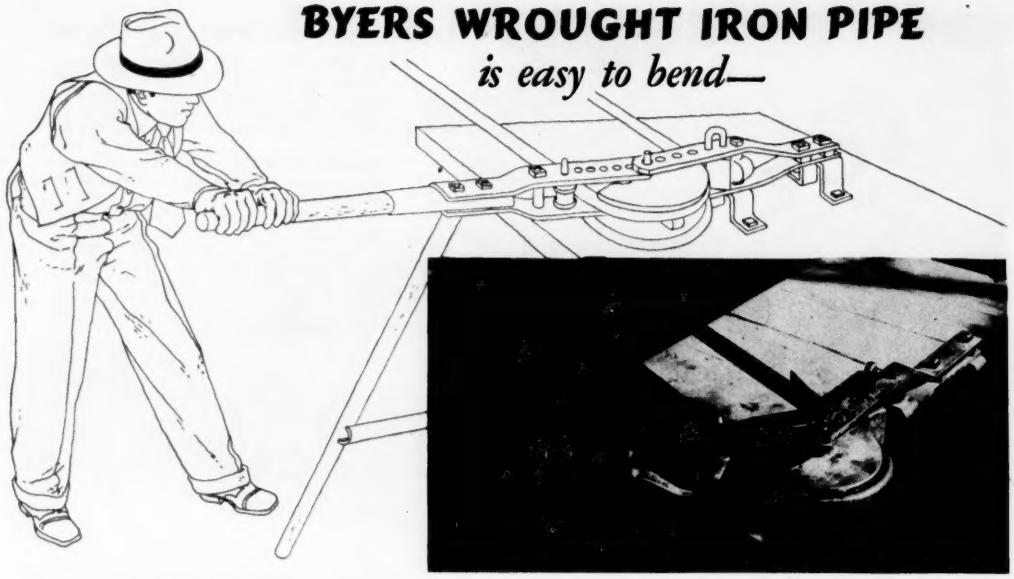


All steel construction. Double chain driven with ½ H.P. motor with gear head. Two and four deck models.

Capacity: TWO DECK VENDOR
25 to 36 bags or cartons depending on size of package.

Capacity: FOUR DECK VENDOR
54 to 78 bags or cartons depending on size of package.

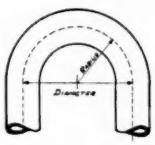
BYERS WROUGHT IRON PIPE
is easy to bend—



If you are installing continuous coils in a radiant heating system, or are required to bend pipe in connection with any type of system, you'll find that wrought iron —in addition to its corrosion resistance, fatigue resistance and weldability—has *ductility* that permits close bends to be readily made cold, with simple equipment.

Minimum Radii of Cold Bends

Some degree of flattening permitted



Size of Pipe	Minimum Radius of Bend Standard Weight	Extra Strong
3/8"	1.10"	1.10"
1/2"	1.40"	1.40"
3/4"	1.75"	1.75"
1"	2.15"	2.15"
1 1/4"	2.75"	2.75"
1 1/2"	3.50"	3.10"
2"	5.50"	4.60"

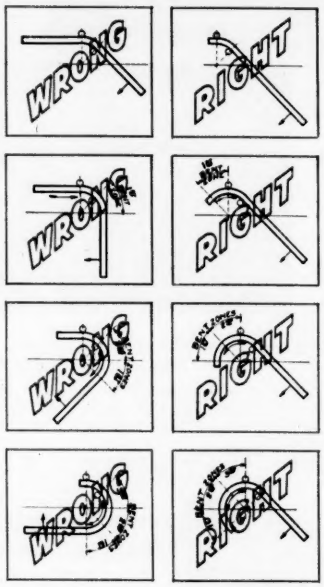
The minimum bend radii recommended for various sizes of Byers Wrought Iron pipe, both standard weight and extra strong, are shown in the table.

In bending wrought iron pipe, three fundamental requirements should be observed. (1) The force should be applied as a slow, steady pressure—to permit the material to flow. (2) The bending stress should be applied successively to short sections of the pipe. And, (3) the bent or stretched portion should be advanced *out* of the bending zone, so as not to be subjected to further stress. The small diagrams at right illustrate the wrong and correct methods.

For large-radius bends the conventional pipe bending tables, employing pins, are satisfactory. For the production of close radii bends, however, it is desirable to employ some form of mechanical pipe bending device. In several instances, customers have used "homemade" equipment with good results, but a number of makes and models of inexpensive pipe benders for field and shop use are available, and generally prove a good investment.

Our bulletin, "The Bending and Flanging of Wrought Iron Pipe" discusses both the principles and practice of cold and hot pipe bending. If you would like a copy for your file, or to pass on to your workmen, we will be glad to supply you.

A. M. Byers Co., Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, Salt Lake City, Seattle, San Francisco. Export Division: New York, N. Y.



Here original bent sections are stressed when successive bends are made.

Here bent sections advance out of bending zone, are not subjected to further stress.

CORROSION COSTS YOU MORE THAN WROUGHT IRON

J. F. NICKERSON, Founder

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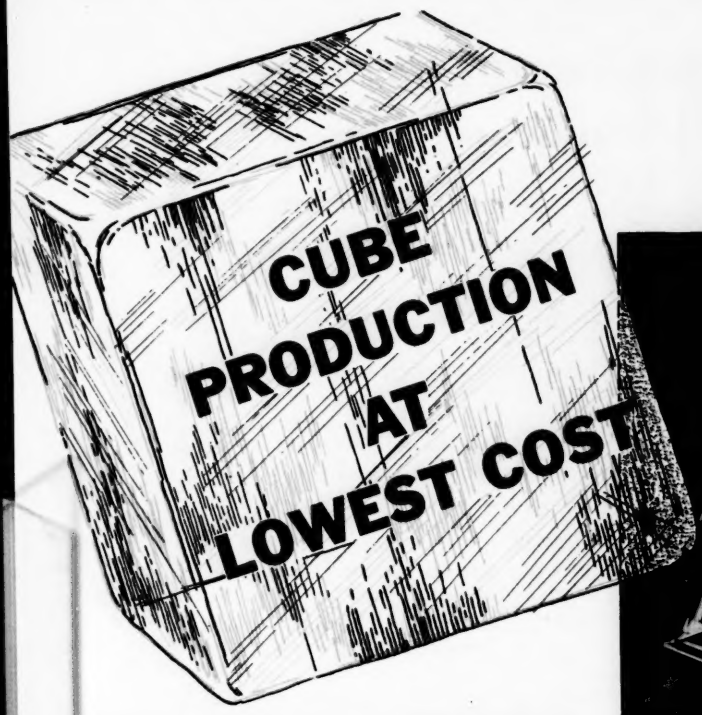

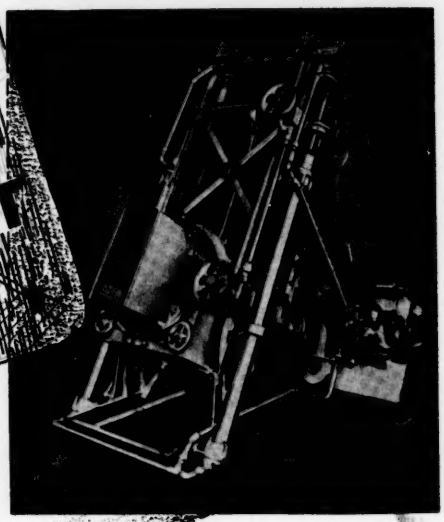

WHAT A PROMINENT ICE MANUFACTURER HAS TO SAY ABOUT "F & E" CUBERS

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April 1st 1948

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We were so pleased with the ease and speed of operation, the low maintenance costs, low production costs and quality of cubes produced by this machine that we have since purchased two more for operation in the Bay Area

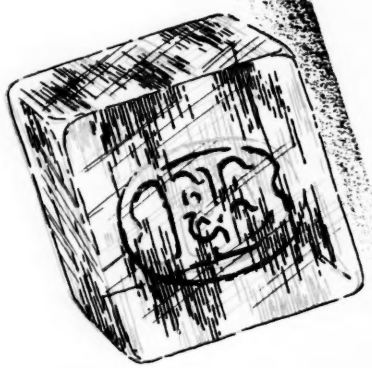
We are "sold" on the "F and E". We might add that our cube sales have quadrupled since 1944

Very truly youre

BAY CITIES ICE & COLD STORAGE CO

K J Sartori, Manager

KJS:s



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IN THIS ISSUE –

Safety and Protection in Electric Systems

The work to provide greater safety and reliability in all equipment goes on without interruption. Many will rate present equipment as good enough because they have never experienced any real trouble with it. But experts in the field who analyze total experience are able to make worthwhile contributions to progress which make troubles and accidents much less probable. On page 21, D. L. Beeman discusses short circuit protection and the characteristics of electric systems and equipment which provide them with the most in safety.

Refrigerated Storage of Dairy Products

Milk and milk products constitute one of the most complex foods known and much time and effort is used to keep them from spoilage. A complete discussion of this subject, particularly in its relation to refrigeration is presented in the paper presented on page 23.

New Freezing and Storage Plant

A modern quick freezing and low temperature storage plant has been constructed by the Cassco Refrigerating Corp. at Harrisonburg, Va. This is in the center of a large poultry raising section where approximately 12 million pounds of poultry is packed each year. Complete description of the new plant, with pictures is given in the article on page 25.

Capital Investments in Business

Many small business men are ignoring the return on the capital invested in their business depending entirely on sales profits. They may be earning a smaller return on business investment than before the war and if they are they are likely to have a hard time when sales begin to taper downward. This subject is discussed by Arthur Roberts on page 26.

The Milk Case Icer

An economical and feasible method of providing refrigeration for milk cases has been worked out by the Metropolitan Ice Co. of Somerville, Mass. It consists of a cotton cloth bag holding 20 pounds of crushed ice. Its method of use and some of its features are described in the article on page 63.

American Warehousemen Annual Meeting

The 58th annual meeting of the American Warehousemen's Association and the National Association of Refrigerated Warehouses was held at San Francisco, Calif., February 7 to 10. Speakers at both conventions discussed general and industry problems, many of them condemning the present prevalent dependence upon government for regulatory measures. Reports of both conventions are covered in this issue, starting on page 31.

The fifth annual meeting of the Refrigeration Research Foundation was held at San Francisco, Calif., February 6. Results of research work accomplished were reviewed and plans for future work indicated. Two research projects were discussed. The meeting is reported on page 46.

Intra-Industry Relationships

One of the basic difficulties of the refrigerated warehousing industry is its lack of proper intra-industry relations, according to Arthur N. Otis of New York City, president of the National Association of Refrigerated Warehouses. Mr. Otis discussed this subject at the annual N A R W Convention. His paper is published in full on page 49.

Recent Developments in Cold Storage

New construction in the cold storage field has opened further opportunities to develop innovations and utilize new equipment developed during the past decade. A new plant in the Northeast (Quincy Market) was described in I &R, Sept. 1948. On page 53, Elliott Hallowell describes the large plant being completed in Dallas to which new methods of construction and equipment have been widely applied.

Ice Association Conventions

The ice convention season got off to a good start in January with a number of unit ice associations holding their annual convention. Among those reported, starting on page 65, are the Illinois Association of Ice Industries, Southern Ice Exchange, Georgia Ice Manufacturers Association and Oklahoma Association of Ice Industries. News of other ice association activities are included in this section.

Court Decisions

A number of higher court rulings were made during 1948 affecting the ice and other refrigerating industries. To assist readers to avoid law suits or to obtain information on pending suits, these are reviewed in the article starting on page 28.

CORROSION-PROOF

More Profit For You When ALL of EVERY Cake is Saleable

Series S-16-E Breaker-Elevator with No. 620 Precision Breaker.

Every part of the new G-W Breaker-Elevator is corrosion-proofed. Breaker and elevator casing, breaker plates, shafting, flights and sprockets are aluminum alloy or stainless steel. That means you get clear, *clean* ice from all of every cake, even after the breaker has been standing idle.

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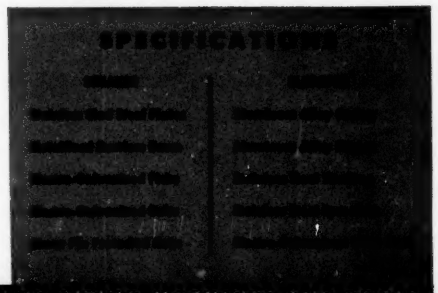
Corrosion-proof construction and advanced G-W design combine to make practically all of every cake saleable. Ask a G-W representative to tell you about this new corrosion-proof unit, and recommend a size to fit your particular requirements.



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HEADQUARTERS FOR ICE HANDLING, CUBING AND SIZING MACHINES AND TOOLS

Selection and Maintenance of Electrical Equipment in Industrial Plants

By D. L. Beeman
Manager Industrial Power Division
General Electric Co., Schenectady, N. Y.

THERE are two approaches to the problem of safety as affected by the selection and maintenance of electric equipment—the positive and the negative. The positive approach removes the basic accident cause. The negative does not remove the basic cause but provides safeguards to lessen the chance of accident.

As an example, if a man has to work on an electric circuit, the positive approach in removing the hazard of shock or burns is to de-energize the circuit.

The negative approach is to work on the energized circuit but to lessen the danger by providing rubber mats, gloves, etc. The basic cause is still present.

The safety engineer who is doing his job to the best of his ability is constantly striving to provide the positive approach. There may be instances where it is not practical or economical to take the positive approach but that should always be thoroughly exhausted before the negative approach is taken.

There are many ramifications of safety as it concerns electric power systems. This discussion will be limited to three items: (1) short-circuit protection (2) enclosing circuits in grounded metal and (3) working on circuits only when de-energized. Proper consideration of the three items can practically eliminate accidents to operating and maintenance personnel due to electrical shock or burn.

Short-circuit Protection

It is astounding to see the number of existing installations, and even new installations, where electric equipment is installed without adequate short-circuit protection. First, let's review what we mean by short-circuit protection. There are, so to speak, two kinds of current in an electric system. There is the load current, the magnitude of which is determined by the magnitude of the load connected to the system. Everyone understands this and I believe there are very few cases where, for example, a 400-ampere circuit breaker is applied to carry a 600-ampere load just to save a few pennies or because of ignorance on the part of the person selecting the equipment. This current can be analogous to the water flow in a hydraulic system. If we have a reservoir, a dam and a powerhouse, the amount of water that flows down through the powerhouse is determined by the load on the turbines and not by the capacity of the reservoir. This is like load current in an electric system.

So long as everything is normal in an electric system, only load currents will flow. However, insulation failures occur, conductors get connected up wrong and there are many other ways in which the circuit conductors can accidentally touch each other and cause a short circuit. In the case of a short-circuit, the amount of current that flows is not determined by the size of the load on a feeder but by the kva rating of the transformers and generators supplying the entire system. The short-circuit current is analogous to the water that can flow down the stream when the dam, referred to in our hydraulic analogy, breaks. The amount of water that flows now is determined by the capacity of the reservoir and not by the load on the turbines.

So, to select a circuit breaker, or fuse, or safety switch motor starter, or any circuit-protective device, we must consider two things: (1) the size of the load so that a device of large enough ampere rating can be selected to carry the load current; (2) the size of the power supply system so we can pick a device with a high enough interrupting rating to open safely the maximum short-circuit current.

Just any 600-ampere circuit breaker or fuse is not necessarily adequate to protect a given 600-ampere feeder circuit. The capacity of the transformers and generators supplying the power system to which the particular feeder is connected must also be considered, for in one case these may be small, therefore, a 600-ampere breaker with 15,000 amperes interrupting rating may be adequate because the maximum short-circuit currents do not exceed 15,000 amperes. On another system, the capacity of the transformers and generators may be much greater. Therefore, to adequately protect a 600-ampere feeder on this system may require a circuit breaker rated 600 amperes (to carry load current) as noted above with a 50,000 instead of a 15,000-ampere interrupting rating to adequately handle the maximum available short-circuit currents of the larger system. Note both feeders are rated 600 amperes to carry the load, but both do not have the same available short-circuit current.

I think we all know what will happen when the load current through a circuit breaker, fuse or switch exceeds the ampere rating of the device. It will overheat and may eventually destroy itself.

I don't believe we all know what happens when the short-circuit current exceeds the interrupting rating of a circuit breaker, safety switch, etc. First of all, very high mechanical forces are produced, tending to break inadequate insulators, bend improperly braced conductors, blow contacts apart, etc. These forces go up as the square of the current. For example, if the short-circuit current is 100 times the load current, as it may well be, the mechanical stresses are 10,000 times as great under short-circuit conditions as under load conditions.

These forces can hurl broken parts with a bullet-like speed. You know what would happen if a man got hit with even a small piece of material traveling at such a speed.

The energy released by a short-circuit current arc can create a very high explosive force, particularly if the arc is confined as in a switch box. There is also very high heating in the conductors carrying the short-circuit current because the heat is proportional to the square of the current.

Generally, it is the mechanical stresses due to short-circuit current and the violent explosive forces of a confined short-circuit arc that are the real hazards. We can't prevent all short circuits from occurring but by selecting adequate short-circuit protective devices such as circuit breakers, fuses, safety switches, etc., we can quickly stop the flow of short-circuit current and thus limit the damage to the point of fault.

The hazard of inadequate short-circuit protective devices is that, when they attempt to interrupt the flow of short-circuit current, they will fail due to the high mechan-

ical stresses and then arc over phase-to-phase or phase-to-ground in the switch box. The combination of the high mechanical forces and the explosive effect of the short-circuit arc inside the breaker or fuse or safety switches make these blow up as if a stick of dynamite were placed inside them. There are on record too many cases where deaths and injuries have resulted from failure of inadequate protective devices.

Many people will say, "I have never had a serious short-circuit so why should I buy anything but the cheapest, lowest interrupting device available." No one would think of laying sticks of dynamite around his building. You are doing just the equivalent of that when you install circuit breakers or fuses which do not have adequate interrupting capacity, or as is commonly said, "adequate IC."

The positive approach to safety is to first determine what the maximum short-circuit currents are and then apply on protective devices which have an interrupting rating equal to or greater than the maximum available short-circuit current. Don't trust to luck that you wouldn't have a severe short-circuit. They can and do happen.

The problem of selecting circuit breakers and fuses from an interrupting standpoint is reasonably well understood and practiced by reputable engineers who have had experience in heavier industries. However, there is an appalling lack of understanding of the problem among many branches of our profession.

There is, however, no reason why there should be this misunderstanding as it is very simple and easy to select circuit breakers with adequate interrupting rating. There are tables published in the manufacturers' literature and AIEE publications.

There is no reason today why motor starters, circuit breakers, and high-voltage fuses (fuses above 2300 volts), cannot be applied adequately. This equipment all has interrupting ratings and there are simple guides for their application.

There is, however, one weak point in the short-circuit protective picture, and that is the National Electric Code fuses. These fuses have an interrupting rating of 10,000 amperes d-c, but no interrupting ratings on a-c, and hence, there is no way for the application engineer to know whether or not he is applying these fuses properly. Tests show that some of these fuses won't even interrupt 3000 amperes a-c. However, they are indiscriminately applied on systems where short-circuit currents are as high as 100,000 amperes.

It is unfortunate that this most widely used short-circuit protective device in branch wiring circuits is applied indiscriminately with little or no consideration of its a-c short-circuit interrupting ability. This situation can be corrected by (1) the fuse manufacturers' assigning a-c interrupting ratings on this equipment; (2) Underwriters' Laboratories requiring that a-c interrupting ratings be substantiated by test, and (3) the electrical inspectors insisting on adequate short-circuit protective equipment on the jobs over which they have jurisdiction.

Metal Enclosures

A second and very important consideration is to install all electric circuits in grounded metal enclosures. The grounded metal serves as a protective barrier between the conductors and the plant personnel. If insulation failures occur, then there is a grounded metal conductor to carry the current. The grounded metal also prevents accidental contact with live conductors.

One of the greatest advances insofar as safety is concerned has seen the introduction of metal enclosed switchgear. There are, however, thousands of installations of old switchgear which can be modernized. In metal clad switchgear, there is no operation of exposed disconnects and all major switching is done by power circuit breakers.

Completely metal enclosed unit substations have been developed for industrial plants. These offer the maximum in safety because all live parts are enclosed in grounded metal. While the vaults in which these old substations were usually located formed a protective wall to prevent unauthorized persons from accidentally contacting live parts, there nevertheless exists a very great hazard to the operating personnel. There seems to be a fallacious idea that a very poor degree of protection will do for operating personnel. It so happens that most of the electrical accidents in industry occur among so-called operating personnel.

Cable circuits should all be in grounded metal such as rigid conduit or interlocked armor cable.

One of the problems in machine tool areas is providing a safe means of readily tapping circuits to connect and disconnect machine tools. The metal-enclosed plug-in bus way has the conductors completely surrounded with grounded metal, yet provides a safe, easy way of connecting or disconnecting a circuit.

The positive approach to this phase of our problem is to eliminate the basic cause of electrical accidents by enclosing all of the live parts in grounded metal. This can be done by the use of modern, completely metal enclosed distribution systems. The negative approach is to build walls and other artificial safeguards around exposed conductors.

The benefits of metal enclosures are partially lost if these metal enclosures are not properly bonded and grounded. In some cases particularly on smaller circuits, conduit connections are depended upon for grounding. This practice is safe only if there is a good metallic connection between all parts of the metal enclosure of the power system.

Even though all parts of the power distribution system are metal-enclosed, it is important that the proper kind of transformers be selected. Whenever transformers are installed in a building or near flammable material, non-flammable, askeral-filled transformers or dry-type transformers with class B insulation should be used. There have been some severe fires due to oil-filled transformers failing and catching fire and then setting fire to the buildings near them.

Even though oil-filled transformers are put in a vault, they still can give off gases under certain conditions of failures which will fill the vault with explosive mixtures. Therefore, in industrial practice it seems that the positive approach is to use non-flammable transformers wherever they are installed in confined areas or near flammable material.

A third item which bears partly on the selection of the equipment and partly on maintenance procedures is to work on circuits only when completely de-energized. So long as there is any voltage in excess of about 50 volts on a circuit, there is a possibility of electrocution.

By the selection of modern distribution systems with duplicate sources the important elements can be de-energized for maintenance without completely shutting down the system. Modern metal enclosed switchgear has readily removable breakers. This permits the breaker to be withdrawn and maintenance be done while the device is completely de-energized. This has not been feasible in older types of switchgear where the breakers are permanently bolted in place.

The positive approach to safety is first, to design your system so that major elements can be readily removed without completely dropping service, and secondly, to work on circuits only when they are de-energized. That applies to lighting circuits as well as any others. This point cannot be stressed too strongly.

Keeping Dairy Products Under Refrigeration

By John J. Sheuring

Associate Professor of Dairying, Dept. of Dairy Husbandry, University of Georgia, Athens, Ga.

THE use of milk and milk-products as human food dates back beyond all printed history. Butter and sheep's milk were used for food by the early Hindoos and Greeks. The use of milk and milk-products as food has continued to increase until now the production, processing and distribution of dairy products is one of the major industries of the world.

In such a large industry, many problems of engineering, sanitation, preservation, and marketing are involved requiring the employment of well-trained technical and administrative personnel. Millions of pounds of dairy products representing a great financial investment are consumed daily by people of all countries and nationalities.

The problems involved in the dairy industry are unique in the respect that milk is one of the most complex foods known and is extremely subject to spoilage resulting from many factors. The investment in equipment and personnel required to keep milk products from spoiling is tremendous.

To fully understand the factors involved in preservation of dairy products, knowledge of the composition of milk is essential.

Composition of Milk

A common definition of milk is the whole, fresh, clean, lacteal secretion obtained by the complete milking of one or more healthy cows, properly fed and kept, excluding that obtained 15 days before and 5 days after calving, or such period as may be necessary to render the milk colostrum free.

Cow's milk usually consists of about 87.0 per cent water, 4.0 per cent milk-fat, 3.0 per cent casein, 0.5 per cent albumin, 4.8 per cent lactose and 0.7 per cent ash.

The fat of milk is a mixture of glycerides of the following acids: butyric, caproic, caprylic, capric, lauric, myristic, palmitic, stearic and oleic. All of these acids are saturated except oleic which is present in the greatest relative amount.

The proteins of milk consist of casein, lactalbumin and lactaglobulin and exist in colloidal suspension. These proteins are composed of the elements; carbon, oxygen, hydrogen, nitrogen and traces of iron, sulphur and phospherous may be present.

The only carbohydrate present in milk is lactose or milk-sugar. Lactose is a disecchariде which upon hydrolysis forms two monosaccharides, glucose and galactase. Lactose may, also, be decomposed by bacteria yielding lactic acid.

The ash of milk is composed of calcium, phospherous, sodium, potassium, iron, magnesium, carbon, chlorine, silicon, copper and iodine.

Milk contains vitamins A,B,C,D,E, and G, as well as the pigment carotin.

The enzymes present in milk are lipase, proteinase, oxygenase, catalase, peroxidase, and phosphatase and probably several more that are synthesized by bacterial action.

Therefore, milk is an extremely complex product especially well adapted to supplement the nutritional requirements of an adequate human diet. It is, also, a complete food for microorganisms and the problem of controlling their actions is a major one in the dairy industry.

Milk and milk products may be preserved by numerous methods, the most common of which are cooling or freezing, drying or dehydration, heating and chemicals. The type of preservation method employed will depend upon the utilization of the milk products, the equipment available, the expense involved and the length of storage period.

The treatment given to milk during the various stages of processing will greatly influence the keeping quality and the physical and chemical factors in utilization after the processing treatment.

Numerous chemical and physical reactions may take place in milk during the heating, cooling and storage processes. Since this paper is designed primarily with the utilization of refrigeration in the storage of dairy products, the subject will be discussed from the viewpoint of heat and cold treatment upon individual dairy products.

Refrigeration of Milk

The largest volume of milk is distributed in bottles, either paper or glass. The importance of immediate cooling of the milk on the farm in controlling the development of bacteria and off-flavors has been studied by numerous investigators. Table I indicates the importance of rapid cooling in controlling the growth of bacteria.

TABLE I—THE EFFECT OF TEMPERATURE AND TIME ON THE GROWTH OF BACTERIA

Time in hours	50 F.	60 F.	70 F.
Start	3,000	3,000	3,000
2	3,000	3,000	4,000
4	3,000	3,000	4,000
6	3,000	4,000	5,000
8	4,000	10,000	160,000
10	4,000	20,000	360,000
24	4,000	97,000	760,000
26	8,000	146,000	294,000,000
28	10,000	242,000	540,000,000
30	10,000	900,000	720,000,000
32	12,000	800,000	1,560,000,000
34	13,000	1,920,000	sour
48	14,000	48,000,000	
50	16,000	56,800,000	
52	13,000	69,600,000	
54	40,000	76,600,000	
56	350,000	100,000,000	

The heat treatment given to milk will greatly effect its keeping qualities by destroying harmful bacteria and enzymes present in milk. Proper cooling will aid in maintaining the milk in a good physical state and in prevention of microbiological growth.

Some objectionable flavors that may be minimized by proper heating and cooling of milk are maltiness, souring, bitterness, oxidized and rancid.

Milk should be rapidly cooled on the farm, again after pasteurization and kept cold until consumed.

The storage of milk by freezing was practiced during World War II but was not very successful. Freezing of milk tends to destabilize the proteins which causes curd separation upon thawing. Freezing of unhomogenized milk, also, will encourage fat separation and oiling off when the milk is thawed.

Paper presented at Southeastern Regional Training Conference of Refrigeration Research Foundation.

All dairy products are extremely sensitive in absorbing odors from other foods in storage and should never be stored in the presence of fish, onion, garlic or similar products.

Refrigeration of Cream

Frozen cream is stored in large quantities by the ice cream industry to supply a milk-fat shortage that usually exists during the winter months. If cream is processed correctly it may be stored for several months. Since cream is a high fat substance it is extremely subject to lipolysis and development of rancid flavor. Sweet cream is, also, subject to oxidized flavor development.

If sweet cream of low acidity is mixed with sugar to a percentage of 42 per cent and heated to 180 F. for 20 minutes in stainless steel equipment, cooled and stored at –15 F. in well tinned cans, the cream should keep for several months.

Oxidized flavor in frozen cream may be minimized by adding any of several tested antioxidants to the cream before pasteurizing.

Refrigeration of Butter

The storage of butter is of special importance in the southern area because of the large amounts used in ice cream mixes. In general, the same precautions can be used for butter as for sweet cream except no sugar is added.

In the southern states, practically all storage butter is used for ice cream and, therefore, should be at least 92 score, meaning that it is made from fresh, sweet cream containing no objectionable flavors.

Cream that is churned into butter for storage should not be neutralized, should be pasteurized at 180 F. for at least 20 minutes and churned in clean churns. All parchment should be soaked in brine or a chlorine solution of sufficient strength to destroy most microorganisms.

Sweet cream butter is extremely subject to oxidized flavor development and a recommended antioxidant should be used. Sweet cream butter should be stored at approximately -10 F.

Concentrated Milks

In the group of milks labelled as concentrated milks are included concentrated skim milk and whole milk, sweetened concentrated skim milk and sweetened condensed whole milk.

Concentrated skim milk usually contains about 30-36 per cent milk solids not fat. Some tests have been run on the storage of concentrated skim milk at temperatures of –15 F., but although it may be kept a short period of time, it is subject to protein destabilization and curdling when thawed unless extreme precautions are observed.

Sweetened condensed skim milk usually contains about 40 - 42 per cent sugar, preferably sucrose, and may be stored to a better advantage than the unsweetened product.

Sweetened condensed whole milk usually contains about 8.5 per cent milk fat, 20 per cent milk solids not fat and 42 per cent sugar. The sugar used should either be all sucrose or approximately 50 per cent sucrose and 50 per cent of an enzyme converted corn sirup. Although sweetened condensed whole milk is frequently stored without refrigeration, it is subject to discoloring and development of objectionable off flavors.

The following procedure for preparing sweetened condensed whole milk has been found to produce an excellent product. Sweet, fresh whole milk is standardized to the correct fat, milk solids not fat and sugar ratio. The mixture is heated to 200 F. for 5 minutes, cooled to 150 F. and condensed in a stainless steel vacuum pan. When the correct concentration is obtained, the milk is cooled with vigorous agitation to 86 F. and seeded with lactose crystals at the rate of 1 oz. per 100 pounds of milk. The agitation is continued for one hour and then the milk is rapidly cooled to 50 F., and stored in well tinned cans at 35 F. This product may be held in storage for several months and will maintain excellent flavor and body characteristics.

Dry Milk

Dried skim milk powder and dried whole milk powder are used extensively in the southern area for making ice cream mixes. Usually they are stored at room temperature although repeated tests have shown that storage at 40 F. is preferable as far as keeping the powder from discoloring and developing off flavors.

Ice Cream

The manufacture and storage of ice cream requires a large amount of refrigeration. Ice cream is subject to the same flavor developments as other dairy products but to a greater extent in some fruit flavors especially strawberry.

Ice cream should be stored at -15 F. and the temperature maintained at that level. Repeated heat-shocking of ice cream will have a very detrimental effect on the body and texture causing iciness to develop, and settling of flavors in some instances.

Fruit flavored ice creams are especially sensitive to slight ammonia leaks in the hardening room and will cause considerable discolorization.

Cheese and Cheese Foods

These products are subject to many flavor developments due to enzymatic and bacterial action. By the time that warehousemen are interested in these products most of the flavor development has occurred. Generally speaking, these products should be stored at 35 F. in the absence of any other products that might cause offensive odors to be absorbed.

Summary

The proper storage of dairy products is a major problem in the dairy industry and involves a tremendous investment in money and personnel.

Dairy products are extremely sensitive to spoilage by chemical, enzymatic and bacterial action. A large part of the money invested in research activities is spent in trying to develop methods of preventing off-flavors in dairy products.

Some procedures that should be followed in storing dairy products are outlined in this paper, although many factors need further study.

Standards for Cast-Iron Pipe Flanges and Flanged Fittings

THE new American Standard for cast-iron pipe flanges and flanged fittings, Class 125 (ABA B 16.1-1948) has been published by the American Society of Mechanical Engineers. It is pointed out that one of the most important phases of the standardization movement is the putting of American Standards into practice. To this end it is requested that all who have use for such standards do what they can to bring about their general acceptance.

Ice and Cold Storage Plant Adds Quick Freezing And Low Temperature Storage

A MODERN quick freezing and low temperature storage addition has been made to the ice and cold storage plant of the Cassco Refrigerating Corp. at Harrisonburg, Va. The Harrisonburg plant, the largest in operation by Cassco, has a capacity of 45 tons of ice daily and 264,000 cu. ft. of cooler space plus complete facilities for rapid icing of refrigerator cars and trucks.

The new quick freezing and low temperature storage unit was placed in operation in April, 1948. The building is 107 ft. long, 64 ft. wide and four stories high. The walls are of brick over tile, and all columns, floors and the roof are of reinforced concrete. Insulation consists of eight inches of cork applied throughout. Freezer storage space held at –10 F. totals approximately 175,000 cu. ft.

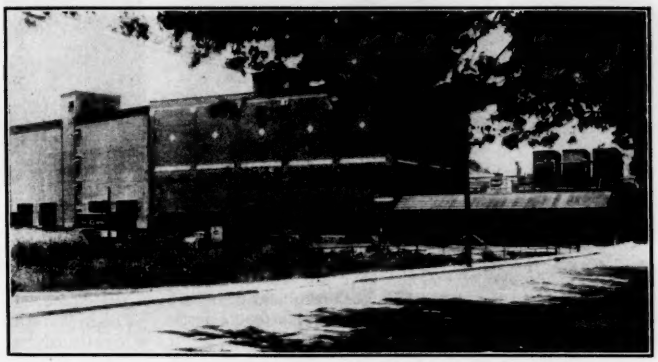


Fig. 1—The new Cassco Refrigerating Co. plant at Harrisonburg, Va.

It is equipped with a blast tunnel of modern design having a quick freezing capacity of 50,000 lbs. of products in twenty-four hours. This tunnel, approximately 20x60 ft. is located in the middle of the third floor freezer storage room. The coils and fans for same are located on a deck, supported by steel beams, in the roof of the tunnel. The louvres at the sides of the tunnel are adjustable. This new unit, together with the original ice and cold storage plant, is served by nine ammonia compressors, as follows: one 7½ x 7½; three 9 x 9; one 10 x 10; one 12 x 12; one 7¾ x 5 booster and two 11½ x 8 boosters.

The building was erected by Guy J. Hafer, contractor, Chambersburg, Pa., and the necessary refrigerating equipment, ammonia coils, etc., were supplied and installed by Frick Co., Waynesboro, Pa. During the course of this construction old type condensers were replaced with three units of the modern evaporative type, which were also supplied by Frick Co.

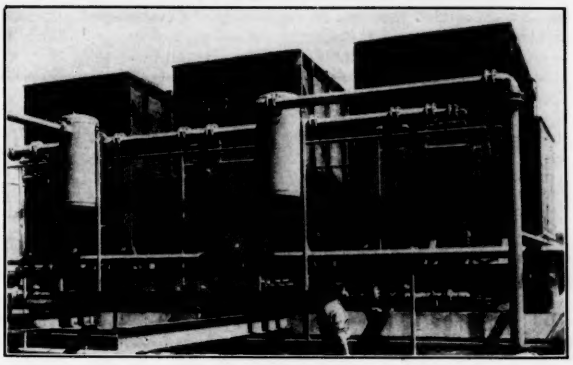


Fig. 2—Three evaporative condensers save water, keep the head pressure low.

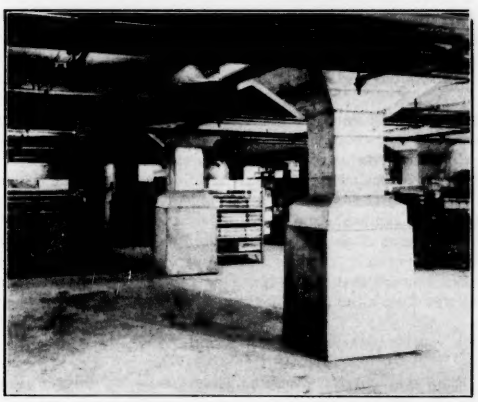


Fig. 3—One of many freezer storage rooms.

Harrisonburg has a population of approximately 12,000 and is the county seat of Rockingham County, which is one of the largest poultry raising areas in the United States. Approximately twelve million pounds of poultry is packed each year by the processors in the immediate vicinity of Harrisonburg. Much beef, pork and dairy products are also produced in that area.

Ice Plants and Stations

Cassco Corp. and its wholly owned subsidiaries, Cassco Berkeley Corp., Northern Virginia Ice Corp., Cassco Warren Corp., and Cassco Refrigerating Corp., own and operate ice plants and stations at twenty locations in the State of Virginia, and one in West Virginia.

The parent Company has ice plants and stations located in Staunton Buena Vista, Lexington, Lynchburg, Bedford, South Boston, Pulaski, Waynesboro, Radford, Christiansburg, Altavista, and Appomattox, Va. Total productive capacity is 250 tons of ice daily. It has a retail coal yard at Bedford and a bottling plant at Radford, where carbonated beverages are produced and sold under the "Cassco" label. It also has exclusive franchises from the Clicquot Club Co. to bottle and distribute the full line of these beverages in twenty-eight counties in Virginia and three in West Vir-

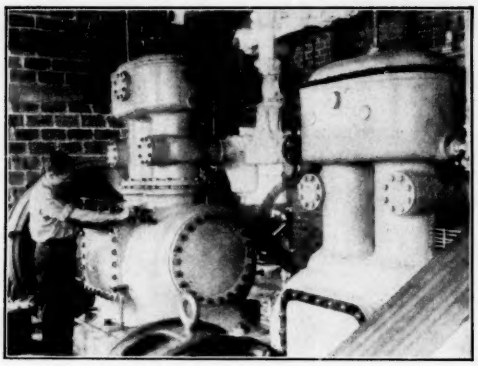


Fig. 4—Two of the five Frick ammonia compressors.

ginia. At present the company is producing and distributing this line of beverages from its bottling plant in Waynesboro, Va.

Cassco Berkeley Corp. has an ice and cooler storage plant at Martinsburg, W. Va. Productive capacity there includes 40 tons of ice daily, 720,000 cubic feet of cooler storage space, and complete facilities for rapid icing of railroad cars and trucks.

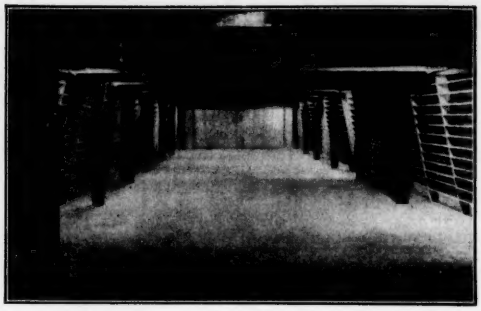


Fig. 5—The new quick-freezing tunnel is 63 ft. long, 19 ft. wide. Coils and fans are overhead.

Northern Virginia Ice Corp. has ice plants at Warrenton, Culpeper, and Orange, Va. Total productive capacity is 55 tons of ice daily.

Cassco Warren Corp. has an ice plant at Front Royal, Va. with productive capacity of 25 tons.

Cassco Refrigerating Corp. has an ice and locker plant at Luray, Va., with a capacity of 15 tons of ice daily and 300 frozen food lockers. It also has ice stations at Elkton and Shenandoah, Va. Its other and largest plant is at Harrisonburg, Va.

As Dollar Value Decreases

How it Affects Profits and Costs and Other Vital Business Statistics

By Arthur Roberts

MORE than one man in business has asked us, "When the value of today's dollar is taken into consideration, how much profit am I really making and where do I stand financially compared to prewar years?" We find from our field work that many small business men have more than a passing interest in this subject, and so we will discuss its ramifications so that the reader can consider his own case intelligently.

Inflation and deflation exert a malignant influence upon operating profits and business holdings, an influence that few men attempt to analyze and which they should consider in order to lessen the impact from either extreme. Food prices are more than 100 per cent higher today than in 1939 and one dollar of prewar days is worth only about 60 cents on the basis of our over-all economy. This means that the retailer who earned 6 per cent on sales in prewar days should earn 10 per cent today if he wants to make comparable dollar profits on the same sales volume. If anyone tends to be satisfied with the same percentage of net he earned in prewar days he should realize that this net is in 60-cent dollars before tax, hence, these boom days may not be as bountiful as they seem. Moreover, the tax is much higher than in prewar times. In effect, this is a further cut in the value of the dollar profit though the reduction is indirect.

All Accounts Must be Increased

Balance sheet accounts should be considered in the same light. Cash is in 60-cent dollars, hence, it should be 66⅔ per cent more than in prewar times. In other words, to get equivalent buying power, he should have $1,000 for every $600 he had before the war. If credit is extended, the accounts receivable should be appraised in similar manner. For every $600 in receivables carried before the war, he should be able to raise the ante to $1,000 and maintain prewar efficiency on credits and collections. If receivables show a smaller increase he is doing a better job on credits and collections. His inventory may have increased in similar proportion and not indicate an overload in inventory investment.

If the current assets, cash, receivables and inventory should be higher in proportion to the reduction in dollar value, this means that his working capital, the difference between the current assets and the current liabilities, should be proportionately higher than in prewar days. If he is carrying fewer obligations to offset the differential, he may get by with approximately the same working capital as in prewar times, but, in most cases, this isn't likely.

In fact, because of the decrease in dollar value, the dollar buys less, and so, the business man must pay more dollars for what he buys and this tends to increase the current liabilities so that his working capital should be at least 66⅔ per cent more than it was in prewar days. He may have to raise this figure if his current obligations average up more each month than they did before the war.

Fixed Assets

Now take the fixed assets. They are worth only 60-cent dollars, which means that those who want to replace prewar assets today must give 66⅔ per cent more dollars.

If they have been charging off depreciation on the basis of prewar estimates they will find too little in their reserve accounts because they must buy new operating equipment with 60-cent dollars and give at least 66⅔ per cent more for it. A shortage in the reserve accounts means that the net worth must be charged with the difference, and so, it is really less than it looks on paper. Many are in this category. They haven't enough in their reserve accounts to cover the purchase of replacement equipment when the old is written off for new.

Big industrialists, sensing this spectre, have increased their reserves about 30 per cent to offset the reduction in the purchasing power of the dollar, and as inflation moves upward, they are increasing their reserves to take care of subsequent re-valuation. It is doubtful that the Treasury will recognize this as a good reason to write off more depreciation on the income tax return, but it is a wise business move from the standpoint of conservative accounting.

In some cases, businessmen contend that if they had to replace old equipment for new today they would have to pay three times the prewar price. In this event, an increase in the reserves for depreciation to take care of the reduction in dollar value only would not be enough to cover the cost of the new equipment and these businessmen would have to decrease net worth by a substantial sum.

Now, let's discuss the liabilities. It is obvious that if the dollar is worth 60 cents, the price of goods and services the dealer buys, in most cases will have increased accordingly unless he has cut expenses. If he has been operating in prewar years and since at minimum expense, then his current liabilities will be more in dollars than they were in prewar days. The 60-cent dollar is the yardstick. His current obligations should not exceed 66⅔ per cent of prewar figures, otherwise, he is probably passing up discounts or is slow pay, indicating a weak working capital position. He hasn't made an attempt to maintain the same liquidity of working capital that he had before the war. Inflation weaves an intricate web around business operations and it pays to give some thought to this relationship in order to conduct business so that the variation in dollar value will give a minimum of trouble.

Short-Term Loans

Short-term loans, which are current liabilities covering a year or less, do not go back to prewar days. As inflation increases, all other things equal, it is easier to pay off short-term loans because they are paid with cheaper dollars. It is said that Hugo Stinnes, after World War I, acquired tremendous holdings in Germany by contracting to buy up plants on credit, then he waited until inflation moved upward and paid off his obligations with wallpaper marks.

Fixed liabilities, if incurred before the war, will give the business man a break in this inflationary period, providing he pays them off when the dollar is cheap. If he holds them until the dollar bounces back, he is gaining nothing. As in physics, the reaction is in direct ratio to the propulsion of an object, so the higher inflation soars, the bigger the swing eventually to the other extreme, in which case it might be that a fixed liability incurred in 1939, we'll say, if not paid before deflation completes its cycle, may have to be paid with dollars much harder to get than they were when the long-term loan was incurred. Usually such obligations in this field cover mortgages and outstanding bonds. Try to pay off these long-term loans now if you can.

Net worth is also affected. The business with $30,000 net worth before the war should have about $50,000 now, or it isn't worth so much. Even if there is a $50,000 net worth now, the financial standing hasn't been improved in ten years. The business is faced with just as much trouble if deflation comes to town. There has been talk that our economy will make a U-turn some day. It is worth considering.

If the dollar goes up in value, cash in bank will be worth more, and so, a good cash position is desirable during this inflationary period. Accounts receivable will be in the same category—IF—you can collect them all. If the owner has any money due him personally or due his business, he should see that the debtors pay up when due. During the 1930's some businessmen had to write off substantial sums in bad accounts because the debtors could not pay them when business slipped into the lower brackets and their incomes were reduced. For this reason, it pays to get your money today—even in 60-cent dollars.

Inventory is another asset that may be bloated if deflation sets in. This means a write-off to net worth. Supply is catching up with demand in many fields. Keep the inventory stockpile down to an amount consistent with maximum volume and maximum profits.

Fixed assets, too, will decrease in value. If you had bought working equipment of any kind during the inflationary period, it will decrease in value during the deflationary period, and the loss should be charged to net worth. The value of business properties purchased during the inflationary period may have to be revived downward. A business property bought in prewar days will probably not be affected unless the owner has been foolish enough to appreciate it on his books to reflect the 60-cent dollar. In this case, he'll have to revise his figures downward also. In the event that deflation sets in, many business men will be obliged to write down their assets, otherwise, they will be carrying water on their balance sheets. You can't write down the liabilities carried over from an inflationary to a deflationary period. The current liabilities will be harder to liquidate, and so, keep them down.

Are Operating Ratios Satisfactory?

Today, of all times, one should not consider the figures on the profit and loss statement and balance sheet from the sole standpoint of mathematics. Go behind the figures to determine whether your operating ratios are satisfactory, whether the elements of income and outgo are in keeping with experience figures gathered in periods of efficient management. But that isn't all. In this crucial period, the value of the dollar must be considered also. If the business man expects to maintain a strong financial position and by-pass heavy losses when deflation comes he should view his business statements in the light of the 60-cent dollar and what the dollar may be worth tomorrow.

Everything that goes up must come down. The end of the inflationary spiral and declining prices will put the squeeze on all businessmen unless they take soundings of their position now.

Refrigeration Men Favor Safety Code

ADOPTION of a statewide safety code provision in Wisconsin to protect the public from accidents due to improper installation of refrigeration equipment was advocated by the Refrigeration Contractors' Association of Wisconsin at its convention (Jan. 30) in Milwaukee.

The association went on record as favoring a provision suggested by Milwaukee Fire Chief Edward C. Wischer, who said that all fire chiefs in the state favor such action and would aid in obtaining the enactment of proper legislation. The suggested provision also would have to be approved by the State Industrial Commission.

Court Decisions

By Leo T. Parker

Higher Court Rulings of 1948 Cover Legal Angles Affecting Refrigeration Industries

DURING the past few months the higher court rendered several outstanding decisions, knowledge of which will assist readers to avoid future expensive law suits. Also, these new decisions may be advantageously utilized by readers to win unavoidable law suits.

Delay is Fatal

According to a recent higher court delay in filing a suit to stop erection of a business building in a residential zone entitles the property owner to complete the building and operate the business.

For example, in Barksdale v. Allison, 210 S. W. (2d) 616. it was shown that a salesman left employment and started construction, in a residential zone, of a building to be used for sale of ice. After the salesman had spent $10,000 on the building, and its completion only required connecting the building with electricity and water, his former employer filed suit and asked the court to grant an injunction against completion of the building which violated the above mentioned zoning ordinance. The higher court refused to do so, saying:

"Under such circumstances, the court was authorized to conclude that appellant's right to injunctive relief was lost by laches and estoppel."

Zoning Ordinance Invalid

Generally speaking, municipal zoning ordinances are intended to benefit a majority of citizens. If an ordinance fails to accomplish this benefit, it is invalid.

For instance, in Boehme v. City of San Angelo, 185 S. W. (2d) 601, a suit was filed to compel city officials to grant a permit to a company to build a garage in an area zoned as residential property.

The testimony proved that the company had been continuously in operation at this location since 1924, but the zoning ordinance was not passed by the city until 1940.

The company's counsel contended that the ordinance was ineffective to prevent construction of a garage to house its delivery trucks, eleven in number, on the premises instead of leaving them parked on the streets or on the adjoining vacant lots.

The lower court refused to render a decision in favor of the company, but a higher court reversed this verdict. This court said that the garage was designed not only for the convenience of the company but also as a benefit to the public by taking its trucks off a public street.

Legal Status of Ice Deliverymen

Considerable discussion has arisen from time to time over the legal question: Are persons operating ice delivery routes who use vehicles owned by the ice company employees or independent contractors?

The importance of the answer to this question is found in the new higher court case of Ice Service Company v. Goss, 212 S. W. (2d) 933. Here the higher court was asked to decide whether the ice company must pay unemployment compensation tax to its ice deliverymen. If they are employees the tax must be paid, but if they are independent contractors the company need not pay the tax.

The testimony showed these facts: The Ice Service Company sold ice to the men at 25 cents per hundred pounds if the men supplied their own transportation, or 30 cents per hundred if the company furnished the vehicles. Quite a number of men who could not afford to furnish delivery facilities have been using company vehicles.

The higher court held that deliverymen who furnish their own vehicles and pay the Ice Service Company 25 cents per hundred pounds for ice are independent contractors and no unemployment tax need be paid to the state on the wages earned by these men.

However, the higher court held that deliverymen who paid 30 cents per hundred pounds for ice delivered to customers in vehicles furnished by the Ice Service Company are not independent contractors and therefore the company must pay unemployment tax on the wages earned by these men. This court said:

"All vehicles supplied by the company were maintained and serviced by it. Drivers merely return the equipment to the company custody when daily work on the routes has been completed. . . . The relationship of master and servant existed."

Lessor Owns Equipment

Considerable discussion has arisen from time to time over the legal question: Can a purchaser of an ice station sue and recover damages from its seller when he learns that the seller does not own all the equipment in the station?

In Barton v. Walker, 200 S. W. (2d) 801, it was shown that the owner of a station sold it for $500 with privilege of removing his "personal property."

The purchaser sued the seller who removed certain other articles including an electric fan and, aluminum ware, etc. Also, the testimony showed other equipment and items in the station did not belong to the seller, but was the lessor's company equipment.

The higher court said that unless before the sale contract was made the seller fully explained to the purchaser exactly what items and equipment were not included in the sale contract then, under these circumstances, the seller was liable to the purchaser for the value of all these items and equipment.

$80,000 Damages

It is well settled law that a municipality is liable in damages where it is shown that operation and conduction of its sewerage department results in pollution of water utilized by a private corporation in the manufacture of ice. This point of the law was discussed in the recent case of Southern New England Ice Company v. West Hartford. 159 Atl. 470.

The facts of this case are that a municipal sewer system overflowed and discharged raw sewage, including fecal matter, into a stream whose water was utilized by a company in the manufacture of ice. The ice manufacturer filed suit against the city to recover damages. The higher court held the ice company entitled to recover $80,000 damages, and said:

"The plaintiff (ice company) was a riparian proprietor and as against it the defendant (city) had no right to discharge any substance into the stream above the pond which would appreciably or materially pollute the water or interfere with any reasonable use the plaintiff saw fit to make of it. . . . It is no defense that the defendant (city) was a municipal corporation and the pollution was the result of its efforts to dispose of the sewage from the dwellings and other buildings of its inhabitants."

Taxable Income

According to a recent higher court if a creditor charged off bad debts several years ago, and these debts are now collectable the creditor must pay the present higher income taxes on this income.

For example, in St. Louis Refrigerating & Cold Storage Company v. United States, 162 Fed. (2d) 394, the testimony showed facts, as follows: A man named Walton was indebted to the company for $25,000 and gave the latter five promissory notes of $5,000 each to secure the indebtedness. Later Walton assigned to the company his life insurance policy.

During its fiscal year 1933 the company charged off as a bad debt the $25,000 of indebtedness of Walton evidenced by these notes, and in its tax return for that year deducted the $25,000 as a bad debt, thereby reducing its tax liability. Several years later Walton died and the insurance company paid the debt.

The higher court held that the company must pay income tax on the $25,000 in the year it was paid by Walton, although the tax rate was considerably higher than the year the amount was charged off as a bad debt. This court said:

"The recovery of the debt of Walton previously deducted as worthless, clearly constitutes taxable income in the year of recovery. . ."

Laborer Loses Hand

Modern higher courts consistently hold that where the testimony shows that an employee is trained in some particular line of work and is a skilled workman, he may be entitled to recover total and permanent disability for an injury even though he be able to do other work and at better pay. However, this rule of law is not applicable to employees who do common labor.

For illustration, in Washington v. Independent Ice & Cold Storage Co., 29 So. (2d) 796, the testimony showed facts, as follows: One Washington was employed by the company, as a helper on an ice delivery truck at a weekly wage, working seven days per week. In connection with this work, he also assisted in the operation of an ice crushing machine, attached to the ice delivery truck. One day, an ice pick accidentally dropped into the crushing machine, and Washington reached into the ice crushing machine with his right hand to remove the ice pick. A fellow worker started the ice machine. Before he could remove his hand, it was so badly injured that it was necessary to amputate the hand just above the wrist.

Washington filed suit and asked the court to award him compensation under the State Workmen's Compensation Act for total and permanent disability. He alleged that as a result of the loss of his right hand he is unable to do the work of a common laborer which he claimed is the only kind of work he is qualified to do. The higher court refused to award compensation based on total and permanent disability and awarded compensation provided by the State Workmen's Compensation Act for loss of a hand. This court said:

"In the present case, it is not shown that the plaintiff (Washington) suffers any pain on account of the loss of the hand and clearly he should be able to do a number of things classed as common labor. He might still perform the same kind of work he was doing at the time he was injured, though it would be more difficult for him."

Accidental Injury

According to a recent higher court employees can get payment of Workmen's Compensation as "accidental" injuries, for sickness caused by their working conditions.

In Batesville White Company v. Bell, 205 S. W. (2d) 31, it was shown that an employee had been working for a company for twenty-three years and was forced to quit work on account of a total and permanent physical disability caused by his working conditions.

The higher court awarded compensation to the employee, under a state law which restricted payment of compensation for accidents.

Also, see Rinehart v. Stamper Company, 55 S. W. (2d) 729. This court held that disability from pneumonia contracted by an employe while working in a refrigerator was an accidental injury within the purview of Workmen's Compensation Law, and said:

"To constitute an accident within the definition of that word the event need not reach its consummation immediately."

Not Legal Employes

In determining whether an ice distributor or delivery man is an employee or an independent contractor, the most important factor is the right to control the manner and means of accomplishing the result desired. If the employer has the authority to exercise complete control, whether or not that right is exercised with respect to all details, an employer-employee relationship exists. Otherwise the employee is an independent contractor and the employer need not pay taxes under the State Unemployment Compensation Act.

For instance, in Briggs v. California Employment Commission, 168 Pac. (2d) 696, it was shown that Knoxage Company sold its product through distributors who furnished their own transportation. The company made written contracts with the distributors or delivery men. Several distributors employed helpers. Neither the salary of these helpers or any other expense of the distributors was paid by the company.

The higher court held that the company need not pay taxes on the distributor or delivery men, nor on helpers, under the State Unemployment Compensation Act. This court said:

"The relationship contemplated by the Unemployment Insurance Act is that of employer and employe, and it was not the intent or the purpose of the Legislature to include an independent contractor."

Two Innocent Persons

All courts have adopted this rule: Where one of two innocent persons must suffer from the wrongful act of another, the loss must fall upon the one making the loss possible.

See Walsh v. Hunt, 52 P. 115, where one Hughes was authorized by Willis to negotiate a loan for $500 with which to pay off an existing obligation. Thereafter Hughes presented for Willis' signature a note and mortgage which he signed and executed in pencil. Later Hughes erased the pencil words and figures and wrote in lieu thereof with pen and ink twelve hundred dollars.

This higher court held that the lender could recover $1,200 from Willis upon the theory that the latter was guilty of negligence in executing the documents written in pencil, thus enabling Hughes to perpetrate his fraud.

Hence under no circumstances should any one sign a contract or other instrument whose body is written in pencil.

Not Misconduct

It is well established law that an employee cannot recover compensation for an injury if the testimony shows that the injury resulted from the employee's misconduct. According to a recent higher court an employee who subjects himself to extreme dangers is not guilty of "misconduct."

For example, in Atlantic Ice Company v. Streetman, 48 S. E. (2d) 683, it was shown that the company is engaged in the business of manufacturing and selling ice. An employee was a truck driver and ice delivery-man. One day the employee returned to the ice plant for the purpose of replenishing his supply of ice. He removed the ice from the storage room, running the large blocks through a scoring machine from where it passed into a chute to the

outside platform where it was loaded upon the truck driven by the employee. After loading his truck with ice the employee was walking past the scoring machine when he came into contact with the saws thus sustaining a severe injury. He sued for compensation under the State Workmen's Compensation Act. The testimony showed that the injury was sustained when the employee reached between the guard and saw of the ice-scoring machine to get snow deposited there.

The employer argued that the employee was guilty of "misconduct" which precluded compensation for the injuries received. The higher court refused to agree with this argument and awarded the employe compensation, saying:

"There was a custom of employees to reach between the guard and the saw on the scoring machine to get the snow deposited there; and the claimant (employee) had not been guilty of misconduct that would bar his recovery of compensation."

Seller Breaches Contract

Under no circumstances may a seller repossess ice machinery purchased on installment payment plan, if he breaches or violates any clause in the contract.

For example, in Brandtjen & Kluge, Inc., v. Pope, 192 S. W. (2d) 496, the testimony showed facts, as follows: A seller in January sold certain machinery. The sale was made under a conditional sales contract. This contract provided that in event the purchaser defaulted on any installment, when due, this default would entitle the manufacturer to take possession of the equipment and keep all payments made by the purchaser. The latter paid down $214, and gave monthly notes for the balance due. The contract contained a clause to the effect that before the seller would take possession of the equipment he would notify the purchaser.

A disagreement arose when the purchaser notified the seller that by reason of defects a part of the machinery would not work automatically. The manufacturer demanded that the purchaser make the agreed monthly payments but the latter refused to do so. Then the seller wrote the purchaser that he would sue under the contract immediately because of the purchaser's failure to pay the notes. However, the seller did not state in this letter that he intended to repossess the equipment.

Soon afterward the seller filed suit and took possession of the equipment. Then the purchaser sued the seller for damages for loss of use of the equipment. The purchaser contended that the seller had no legal right to take possession of the equipment because he had not complied with the above clause in the contract which required him to notify the purchaser of these intentions.

The seller contended that his letter was proper and legal notification, but the higher court refused to agree with the seller and held the purchaser entitled to recover damages. Also, the court ordered the seller to return the equipment to the purchaser.

Nevertheless the higher courts consistently hold that a contract is valid which states that a seller may wihout any notification repossess machinery and keep all past payments, if the purchaser defaults in a single payment.

Fails to Repair Truck

Considerable discussion has arisen from time to time over the legal question: If garage employee carelessly or negligently repairs an ice company's motor truck, is the garage owner liable for injuries caused by the defective repairs?

In Moody v. Martin Motor Company, 46 S. E. (2d) 197, the testimony showed facts, as follows: The Liberty Ice Company's motor truck was badly in need of repairs of the steering gear, the radiator, and the brakes. The regular driver of the truck took it to the Martin Motor Company to be repaired. After the repairs were made the driver was seriously injured when the drag link became separated from the steering arm on the truck, causing the truck to swerve off the highway and plunge down an embankment. The injured driver sued the Martin Motor Company for damages alleging that the motor company's employees were negligent in failing to properly repair the steering apparatus causing his injuries.

The lower court refused to hold the motor company liable, but the higher court reversed the verdict.

"One who supplies directly or through a third person a chattel for another to use, is subject to liability to those whom the supplier should expect to use the chattel, if the supplier fails to exercise reasonable care to inform them of its dangerous condition or of the facts which make it likely to be so."

Production and Export of Foods

THE United States exported a record total of nearly 19-½ million long tons of foodstuffs during the 1948 fiscal year, while at the same time domestic consumption of food per capita was running about 14 per cent above the prewar average, Ralph S. Trigg, Administrator of the Production and Marketing Administration, U. S. Department of Agriculture, said in his annual report which was released February 1.

Continued heavy production by American farms, about a third larger than the 1935-39 average, made this record possible. The Production and Marketing Administration, cooperating with other federal and state agencies, assisted in the establishment and administration of the national production goals program which called for this high-level output.

Price support programs, financed by the Commodity Credit Corporation but administered by PMA, encouraged farmers to produce abundantly. But demand for farm products held prices well above support levels in the case of most commodities, and substantial support operations during the year were necessary for only potatoes and a very few other commodities.

Seventy-five special projects under the Research and Marketing Act of 1946 were being carried out by PMA at the end of the year. These included reducing the loss and deterioration of eggs during the marketing process; improving merchandising practices of fresh fruit and vegetable retailers; determining the best types of shipping containers; and studying the advantages and disadvantages of prepackaging foods for sale to consumers.

Canadian Institute Offers Special Course in Refrigeration

THE Canadian Association of Ice Industries has arranged with the Ryerson Institute of Technology to form a class for teaching the principles of refrigeration under the leadership of James Buchanan of the Ontario Department of Education. The course comprises a series of about 20 meetings held each Tuesday night extending until the end of May. At the conclusion of the studies a certificate will be issued which while not giving the recipient his status as an engineer will indicate that he has gone far in qualifying for his papers.

About 30 are in regular attendance and not only display enthusiasm for the instruction, but have shown considerable diligence in performing the necessary ground work as laid out from week to week.

The lectures are open to any person in a refrigerating plant on payment of a fee of $15. Most of the companies whose workmen are attending have agreed to refund this amount to the employee on successfully passing the examination.

Refrigerated Warehousing Industry

NEWS • ARTICLES • ANNOUNCEMENTS

NATIONAL ASSOCIATION of REFRIGERATED WAREHOUSES

Division of American Warehousemen's Association

Executive Offices:
Tower Building, Washington 5, D. C.

Executive Secretary, W. M. O'Keefe
Executive Vice-pres., Wm. Dalton

President, Arthur N. Otis
New York, N. Y.

Vice-president, Fred F. Alford
Dallas, Tex.

Treasurer, J. L. Gagini
Omaha, Nebr.

American Warehousemens' Association 58th Annual Meeting

THE general session of the 58th annual convention of the American Warehousemen's Association comprising the Merchandise Division of the A.W.A. and the National Association of Refrigerated Warehouses convened Monday, February 7, 1949 in the Fairmont Hotel, San Francisco, Calif., General President Harlan J. Nissen. Terminal Refrigerating Co., Los Angeles, Calif., presiding.

General Officers for 1949

President, Clement D. Johnston, Roanoke, Va.

Vice-president, Horace Wilson, Philadelphia, Pa.

Treasurer, Willard Morse, Minneapolis, Minn.

Clement D. Johnston, Roanoke, Va.
President
American Warehousemen's Association

In his annual address, President Nissen pointed out that aside from the many states represented at this meeting a number of members were present from Canada and Mexico but to Mr. Shih Chander Kumar, Director of the Saharanpur Cold Storage, Inc., Ltd., Saharanpur, India went the honor for having travelled the longest distance to attend the meeting.

He paid tribute to Leon Bailey, secretary Pacific States Cold Storage Warehousemen's Association for the splendid work accomplished in arranging the convention details and entertainment.

Secretary of Agriculture, Chas. F. Brannan extended greetings in a letter to the Association.

Following the opening of the Monday morning general session, the Merchandise Division and the National Association of Refrigerated Warehouses, following the usual custom, held their separate meetings on Tuesday, Wednesday and Thursday, reconvening in joint meeting for the closing session at 4:00 p.m. Thursday.

It was evident as the speakers presented their talks that one of the chief problems confronting American business today is the preservation of the free enterprise system. This problem cannot be solved in its entirety by association effort, but must be the concern of each individual at the local level.

Too much dependence upon government for regulatory measures, it was pointed out, invites the very destruction of the initiative which has established the system envied by the peoples of every other nation.

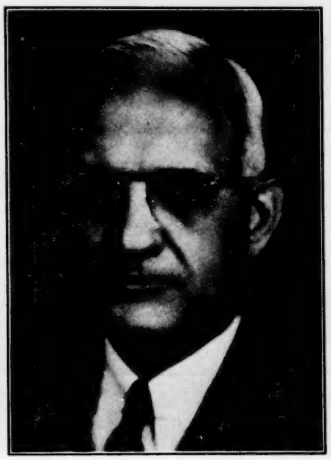
Opening General Session

J. W. Howell, Haslett Warehouse Co., San Francisco and past-president of the A.W.A. extended the welcome to San Francisco and Valle O. Appel, Fulton Market Cold Storage Co., Chicago, responded.

Treasurer Willard A. Morse presented the financial statement of the Association showing a current balance of $2532.17.

J. Leo Cooke, Newark, N. J., president of the Merchandise Division stressed the necessity of cooperation of both divisions of A.W.A. so that the warehousing industry would present a unified front on problems of mutual concern.

Harlan J. Nissen, Los Angeles, Calif.
Retiring President, American Warehousemen's Association



Horace W. Wilson, Philadelphia, Pa.
Vice-president, American Warehousemen's Association

Willard A. Morse, Minneapolis, Minn.
Treasurer, American Warehousemen's Association

Report on NARW

Edgar M. Burns, president of the National Association of Refrigerated Warehouses reporting for that association said that a year ago when looking forward to the next twelve months, he wondered why it was necessary to serve such a long time but now, looking backward, he wondered what had become of those months.

During 1948 he said the NARW had revamped its structure and that they now had an executive vice-president doing an excellent job; new quarters of which they are quite proud and during the year had conducted meetings with regional groups in every part of the country stressing the need of close working arrangements and better understanding of their problems and viewpoints.

They are now embarking on a campaign of public relations which is showing excellent results and through this they expect to let the public know their story and to prove that the refrigerated warehousing industry is "the reservoir of the nation's health" as their slogan claims.

Regarding cooperation with the over-all group, he said the challenge of changing times makes it necessary for the warehousing industry to be a united industry making it a mighty power for good, with a staff possessing the ability to make plans and carry them into execution.

Report of Acting General Secretary

Wm. Dalton, acting general secretary, brought greetings from the executive offices of the American Warehousemen's Association and touched briefly on changing business and economic conditions. The degree of socialism toward which this country is drifting is largely due to the complacency, unwitting and innocently perhaps, of American business men. He said he didn't have a complete answer as to how to meet this condition except through a thorough knowledge of basic business and economic conditions. This convention program, he said, had been prepared with that end in view, to present a concentrated consideration of the more important problems now current in the warehousing industry. It had been developed, he said, by Leon Bailey and his Committee of the Pacific States Association, and consisted of an array of features touching on the system of individual freedom and other vital problems that are so important in the business world.

Vice-President's Address

Clement D. Johnston of Roanoke, Va., in his vice-president's address, called forceful attention to world conditions which have caused leadership of the world, with all its attendant responsibilities, to be unceremoniously dumped into the lap of the United States. We do not want this, he said, and we are now disturbed by the certainty that if any nation is going to start something we, as world leaders, are inevitably involved.

World leadership and the keeping of world peace is a responsibility that cannot be evaded and however burdensome it may be, the leaders of this country must figure out ways of exercising this leadership successfully, he said. Our most pressing job is to sell America and its free institutions, back to the American people. The strength of America is the strength of free men and the initiative and aspirations of free men.

Mr. Johnston is an active member of the United States Chamber of Commerce and Chairman of its Foreign Relations Committee. He recently completed an extensive tour of Pacific Islands at the invitation of the government and established the Island Trading Co. of Micronesia with 300 trading posts to supply the need of the civilian population.

Address of General President

In his General President's address, Harlan J. Nissen emphasized the importance that business leaders should recognize their opportunities and responsibilities in directing and thinking and planning for business based upon experience of yesterday and today. Warehousing, as an industry, he said, has functioned since the beginning of civilization. His complete address follows:

As Ye Sow So Shall Ye Reap

SINCE the beginning of time the course of the world and of industry has been determined by a relatively few men who qualify as leaders. In this room are gathered our industry's leaders of today and tomorrow. Warehousing as an industry has functioned in one form or another since the beginning of civilization. We represent small businesses but we actually are a billion dollar industry.

We, as leaders, can and should benefit by the thinking of the great leaders recorded in history. 2000 years ago the "Leader" whose wisdom influenced the world more than any other said—"As ye sow—so shall ye reap."

This statement is not only a way of life but one of the soundest bits of business advice ever given. Our principal task as leaders, is planning for tomorrow, basing our thinking upon the experiences of yesterday and today. Meetings such as this can and should influence or at least stabilize our thinking and planning for the year to come. A convention, in the modern concept, is no plateau upon which we pause and look backward with satisfaction, but rather a springboard from which we move into the activity of the year ahead. We would be remiss in our purpose in gathering here were we not to face realistically these problems that lie ahead. We must think on a four dimensional basis because, in assaying our managerial responsibilities, we assume the four following specific obligations:

Our responsibility: 1—To our customers; 2—To our employees; 3—To our industry; 4—To the community in which we live, local, state and national.

Too much time is usually spent at conferences of this sort, considering these problems in the abstract without specific focus—we generalize. The results are platitudes—often smug self satisfaction and altogether too often, complaint, without an attempt toward constructive, enlightened, corrective action. Let us for the moment forget the complexities of these problems and substitute therefor a simple question:

What can I, as an individual, do to meet these responsibilities?

For if, out of the programs and councils of the next four days, we can actually return home with an individual action program at the level of a personal pledge that "I can and will do these things," then the companies that sent us here will receive their money's worth. Responsibilities, let's consider these one by one.

1—Our Responsibility To Our Customer

Is our attitude toward him the same when business is good as when business is bad?

Have we conscientiously shared his problems and counseled with him to the degree to which he is entitled?

Is he conscious of the value—to him—of our research programs?

Does he understand our problems to the degree that he does not merely endure our services but acts as our most loyal booster?

How objectively do we answer his complaints?

Are we meeting the mandates of economy of operation through mechanization and modernization to permit a competitive level of rates without penalizing this same customer?

My experiences in the past seven years of active participation in industry work would cause me to answer both yes and no to these questions, but the right answer is self evident. As we move cohesively as an industry, bad customer relations act as a continual irritant in the customer relationships of all of us. If your answers are yes, swell! If not, YOU should do something about it.

For "As you sow, so shall you reap."

Now let's discuss the second point:

2—Our Responsibility To Our Employees

This subject has been discussed more in the abstract and less at the personal level than any subject I know. The damning of labor and of union activities without constructive, enlightened, corrective criticism, is a key fault of management today. It is at this point that HUMANNESS OF RELATIONS can attain top value.

Little things are important. . . Look in your looking glass for a minute: Kindness in every day experiences; Gentleness the rule, sternness the exception; Small loans, where family happiness is at stake; Friendliness in counselling on employees personal problems.

How many employees can you call by name, and do you? Job training, and are you part of it? Courtesy as a habit; The pat on the back.

These things are fun! Your employees cannot live "By Bread Alone."

THE ATTITUDE PREVAILING WITHIN A PLANT STEMS FROM THE VIEWPOINT OF MANAGEMENT ITSELF, BE THE PLANT LARGE—OR BE IT SMALL.

Have you provided physical facilities for employee comfort, safety and well being?

How is the lighting in your plant?

Is safety a going program?

Is plant cleanliness a specific responsibility?

When did you paint last? Fresh paint builds morale.

Are you a junk collector?

Have you considered color engineering? Its effects will surprise you.

Have you really approached mechanization intelligently, with an open mind? It lightens the load.

Have you done the right kind of a selling job on the use of labor saving devices?

Are sanitary facilities adequate?

Answer 'em. . . What's your score? 100 per cent? I doubt it. Mine isn't but it should be.

ATTITUDES! ? ?

When did you last attend a foremen's conference?

How long has it been since you last had breakfast with your engineers?

When have you invited an individual group of men in overalls into your office for a friendly bull session?

Is there an open door policy at your plant?

And does every man in your employ know it?

Do you anticipate labor management problems?

Wat are you doing to maintain the enthusiasm of "eager beavers"?

Are you open minded to suggestions?

What have you done to smooth the problems of discrimination-minorities or inferiority complexes?

When did you last admit that you were wrong?

These are YOUR problems. They cannot be delegated. "As YE sow—so shall YE reap."

3—Our Responsibility To Our Industry

A warehouseman is always in a position of trust—never, never forget it! Upon the 135 million square feet of warehouse floor space and within the 307 million cubic feet of refrigerated space, publicly operated, within this country are housed a great reservoir of the useful goods and foods of this nation. That men entrusted with this responsibility should not feel a high bond of common interest is unthinkable. It is at the level of industry unity that we face the world at large. Witness the American Trucking Association Safety Program or the United Fruit and Vegetable Merchandising program (training in 1948 alone—7191 retail personnel in proper product handling).

"All business in a democratic country begins with public permission and exists by public approval."

Public confidence, public respect, and good public relations, can only be sound if we CAN and DO learn to live together. But without a unified voice the effect is lost. That unity rests within your local and national trade associations. A successful trade association takes more than virile leadership. It takes daily—active—vigorous participation by every man—AND THAT INCLUDES YOU. We cannot be strong by being placid. The 17 year old boy from Tulare did not win the Olympic decathlon by sitting in a rocking chair. This industry cannot maintain its place in the sun without an eager virile willingness to participate: of every member in every city—yes, and every hamlet too.

We do a fine job when the big bad wolf like the Railroad Retirement Act comes along. In fact our staff and our divisions are doing an increasingly good job now, but we have only touched the surface of the potentialities of the kind of a trade association that is possible if 700 members will work as hard as 70 have in the last few years.

As the trusted custodians of the nation's goods, let us make warehousing the most highly respected industry in America today. Let's get on the ball on this public rela-

tions program. Let us leave a heritage, as a challenge to the coming generation, that will be a high mark in American industry. Let us make this banking program work.

"As we sow, so shall we, the industry, reap."

4—Our Responsibility To Our Community

Last but not least—our responsibility to our community. Here again the fear of communism and the fight of free enterprise are the two most discussed topics in the press today. Let's bring it down to a personal level.

What can YOU do about it? And

What can I do about it?

For where you and I walk, there walks our industry. If a corporation is highly respected, understood and thought to be fair, it stands as a shining fortress against all forms of collectivism. If your company qualifies—Who knows it besides yourself? What have you done to interpret your company to people who are interested—at a level they can understand? Are you actively or passively participating in the activities of your community or state, and don't tell me you have no time, for that is not true. Duties are coordinated with rights. Rights cannot be maintained if duties are neglected. Did you read the survey which showed that one out of five people believe democracy can exist without private capital?

1. Does your Congressman or Councilman know what you think and why?
2. When did you last commend a public servant, local state or national?—for his virile stand on a losing, or winning cause?
3. What is your job in the neighborhood improvement association?
4. When did you invite Johnny's teacher or the school principal to your home to discuss the local school problems?
5. Did you bang door bells for the Community Chest? It's free enterprise.
6. Did you serve on the board of Scouts?
7. Or the local hospital?

Or did you weasel out of these duties and just stand by and gripe about the town bad boys and the town indigents?

Think it over now, when did you? These are free enterprise. The answers to these questions are the grains of sand that make up the land of democracy, free enterprise and all that we love in America. Yet you and I sit by our fireside and gripe about the power of organized minorities. Today we the leaders, management if you will, are the minority. Our failure to completely stem the tide of "isms" lies in one word alone—our LETHARGY.

It is our job as leaders, regardless of the immensity of the load, to think and act fearlessly, logically, constructively and vigorously. Our business—free enterprise, democracy itself, is at stake. YOU can do something about it.

For—"As you sow—so shall posterity reap."

Pioneer Warehousemen Honored

At the conclusion of his address, Mr. Nissen stated that there were warehousemen in the industry with 49 years or more continuous service and the convention wished to recognize them. He then read the following list:

P. C. Hyson, Omaha Cold Storage Co., Omaha; Roy C. Griswold, Griswold & Bateman Warehouse, Chicago; G. Dudley Allman, United States Cold Storage Corp., Chicago; Frank Hendersen, American Dock Co., New York City; Frank L. Malsey, Baker & Williams, New York City; Edgar S. Stanley, Star Truck & Warehouse Co., Los Angeles; Wm. Muller, Merchants Refrigerating Co., New York City; Lawrence E. Naumann, Baker & Williams, New York City; Harry Liddle, Merchants Transfer & Storage, Des Moines; Samuel G. Spear, Central Carolina Warehouse, Greensboro, N. C.; Harvey S. Paull, Milwaukee Cold Storage Co., Milwaukee; Percy E. Haslett, Haslett Warehouse Co., San Francisco.

Liaison with Armed Services

A report of the A W A Committee on Liaison with the Armed Services was presented by Charles E. Nichols of Washington, D. C., chairman of the committee. Mr. Nichols explained that the committee was first established in 1945 and later in 1946 was reorganized as a joint committee called the Armed-Commercial Storage Committee composed of representatives of the American Warehousemen's Association and of various technical services of the Army concerned with storage and supply operations. Later it was expanded to include the Navy and Air Force.

Two meetings of the committee were held in 1948 at which the major achievements were the establishment of a program for the indoctrination of key civilian warehousemen in the methods and practices used by the Armed Services and for indoctrination of key storage personnel of the Armed Services in commercial warehouse and distribution operations. The training course for civilian warehousemen was started in April and later in October, November and December. Forty-two men took part. These courses will continue to be offered in April and October of each year. Reports from the members who attended these sessions are, in most instances, very enthusiastic.

In connection with these courses, it is expected to have top level warehousemen see the Army operation and tell the Army top level men how any inefficiencies they may find can be improved. Along with sending civilians into Army Service Depots is a reciprocal program for receiving small groups of top level men from the depots and giving them a brief indoctrination in the methods of private enterprise in operating warehouses.

The Refrigeration Research Foundation has opened its regional conferences to the Army and Navy which have had men at each of the recent conferences. The committee believes the NARW will have an important part in the mobilization of the total resources of the nation for preparedness for future emergencies. For that reason it is recommended that a Committee on Liaison with the Armed Services in Peace be continued until the program is more fully developed. Developments up to this time indicate that there is every reason for continuing the activity either in its present form or in some alternate form, the report concluded.

Warehouse Receipts and Warehouse Law

A report of the committee on Warehouse Receipts and Warehouse Law, E. E. Hesse of Chicago, chairman, stated that the committee had concentrated on efforts to relieve warehousemen from certain provisions of the Uniform Warehouse Receipts Act, (as outlined in the January issue of ICE AND REFRIGERATION) and in this connection had learned of the proposal of the American Law Institute to revise all commercial law. It was recognized that many objectives of the Committee listed above had been recognized as desirable by the American Law Institute.

The entire project, consisting of a revision of the body of commercial law, is to be included in legislation to be known as the Code of Commercial Law, the product of a joint effort by the American Law Institute and The National Conference of Commissioners on Uniform State Laws and this code to be presented to the state legislatures and Congress.

Since this activity has so clearly defined the trend of the Committee's own thought, the Committee has offered its cooperation to the American Law Institute, and it is expected that this cooperation will offer a comparatively easy approach to the solution of the problem. It was pointed out that too rapid progress in this program should not be expected but since it will find wide and important support

from all branches of business and commerce, there should be reasonably rapid progress toward the establishment of a uniform code of commercial law throughout the nation. The committee recommended that AWA provide for continuing liaison with the American Law Institute in order that they may be kept informed of progress and in order that they might give such cooperation or needed assistance as developments may indicate.

Banking Relations

A report of the general Banking Committee was presented by C. J. LaMothe of St. Louis, chairman of the committee. He reported that a new program was initiated this year by coordinating the efforts of the Merchandising Division and the NARW Division in respective Federal Reserve Districts for the common good of the entire industry and it is showing results.

A chairman, co-chairman and committee members were appointed for the twelve Federal Reserve Districts and branch bank cities for the purpose of contacting the loan officers in the major banks of their respective districts. A general program was outlined to each committee member, stressing the importance of contacting these loan officers personally, developing joint meetings and appearing before sectional banking meetings, when possible, advising them of the sound loans that can be developed by becoming "Warehouse Minded" and subjecting themselves to questioning regarding warehouse receipts as collateral.

Reports of these meetings show that knowledge and interest of the average banker regarding warehouse receipt loans was definitely limited, also that there is still a great deal to be done along this line. It is believed that personal contact is the only way to secure proper results and while the committee is quite large, it is small compared to the number of banks in the country and it is, therefore, impossible for the members to cover the territory properly. For this reason every warehouseman is asked to cooperate with the committee members in his territory to acquaint the bankers in his city with the potential business through loans on marketable securities secured by warehouse receipts.

This program has been beneficial, as proven by the number of requests by lending agents, for the brochure "Warehouse Receipts As Collateral" published by the committee. Approximately 50,000 copies have been distributed. Realizing that an educational program is advisable among the loan officers, the committee recommended the publishing of a booklet pointed to "The Bankers of America" telling how warehouse receipts can work for them and giving practical data on their use and value.

Closing Session

THE closing session of the A W A was held Thursday afternoon, the National Association of Refrigerated Warehouses and the Merchandising Division convening jointly at 4:00 p.m. to hear reports of committees, elect officers, and to take care of other general business. At this session it was announced that the next annual meeting will be held at the Edgewater Beach Hotel, Chicago, Ill., January 29 to February 5, 1950.

Report of Chamber of Commerce Councilor

In the absence of John Q. Adams, president of the Manhattan Refrigerating Co., New York City, and National Councilor to the United States Chamber of Commerce, his report was accepted. Mr. Adams reviewed the annual convention of the Chamber held last April, and pointed out some specific problems of the warehouse industry that were discussed.

Regarding construction of terminal food markets under the Hope-Flanagan Act, they were successful in persuading the policy committee of the Chamber to amend certain resolutions which would prevent construction of terminal food marketing facilities where private enterprise had already established suitable facilities. Most terminal marketing facilities have adjacent thereto one or more refrigerated warehouse plants and experience has shown that the duplication of terminal facilities by new construction when not absolutely necessary, depreciates the value of refrigerated storage properties already existing.

Another problem was the Labor-Management discussion. It was apparent that business leaders are interested in developing an industrial relations technique which will provide a broad basis for cooperation on a wide variety of questions by both labor and management leaders in individual businesses and whole industries, local and national. This is known as the "Industry Council Plan" by which representatives of industry, labor, and the public serving on the Council or Committee can deliberate on all of the problems affecting a particular business or industry.

Surplus War Storage Facilities

A report of the Committee on Surplus War Storage Facilities was presented by L. J. Coughlin of Elizabeth, N. J. The report stated that during the year the committee continued to maintain contact with the federal government in Washington. Because of the liquidation of War Assets Administration affairs this contact was somewhat difficult. However, through the office of the Executive Secretary, Merchandise Division, the Committee had circularized the membership, outlining the procedure in connection with disposal of surplus federal real estate and the listing of the warehouse consultants to the various zone administrators.

The chairman then recommended that the committee be discontinued because the War Assets Administration is scheduled to go out of business February 28, 1949, and what remains of the surplus real property will be turned over to another government agency.

Resolutions

The committee on Resolutions with Resolutions for concurrent action covered a number of matters of current national importance such as the maintenance of the private enterprise system, opposition to closed shop, requirement of non-communistic pledge by employer and employee, retention of Taft-Hartley law, opposition to granting unlimited powers to Secretary of Labor, and a clear definition of "overtime on overtime" and adoption of the Hoover Commission's recommendations on reorganization of government bureaus.

The convention approved the report of the Resolutions Committee and ordered copies to be forwarded to the proper House and Senate committees.

The convention concluded by electing the following general officers for 1949:

General Officers

President, Clem D. Johnston, Roanoke Public Warehouses, Roanoke, Va.

Vice-president, Horace W. Wilson, Quaker City Cold Storage Co., Philadelphia, Pa.

Treasurer, Willard A. Morse, Security Warehouse Co., Minneapolis, Minn.

Wm. Dalton, Washington, D. C., executive secretary NARW, will serve as general executive secretary.

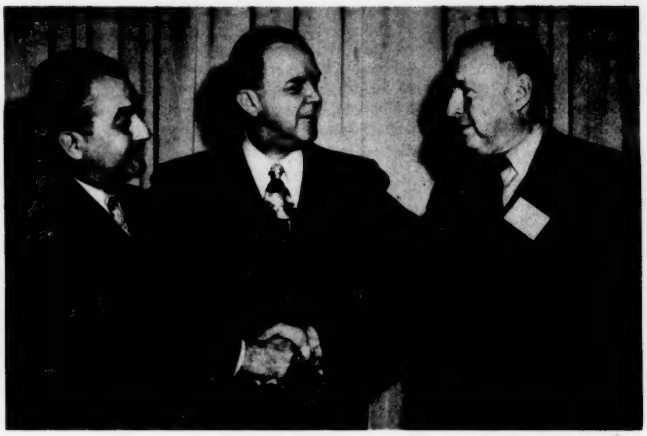
(Continued on page 71)

New officers for 1949 National Association of Refrigerated Warehouses elected at San Francisco convention.

Left, J. L. Gagini, Omaha Cold Storage Company, Omaha, Nebr., Treasurer.

Center, Fred F. Alford, Alford Refrigerated Warehouses, Dallas, Tex., Vice-president.

Right, Arthur N. Otis, Merchants Refrigerating Company, New York City, President.



Merchandising

Through Research • Public Relations • Service Is Keynote of 58th NARW Meeting

WITH a warm welcome awaiting them upon their arrival in San Francisco, the city of the "Golden Gate," members and guests of the National Association of Refrigerated Warehouses gathered in the Fairmont Hotel, Tuesday morning, February 8, 1949 to open the 58th annual meeting, which from the standpoint of interest, activity and program planning will be recorded as one of the most important NARW conventions.

While the elements east of the Rockies did their best to extend the delay, the arrival of the special train from the East finally reached San Francisco, several hours late with all on board and none the worse for the experience.

The months of planning for this meeting, its program and the intense interest evidenced by the membership in the convention meetings was ample evidence of an industry—a major industry—recognizing its problems of today and the future and accepting the challenge to do something about them *now*. Not content with simply riding on past performances or placidly accepting the position it occupies in the economic development of the nation and the world, it proceeded to put its planned program into action and to assure attainment of its objectives by well organized association activity.

Recognizing that successful American business had reached its leadership by the "free enterprise system" and effective public relations in its varied phases, the convention struck its theme on the high note of "*merchandising.*"

Dividing the Merchandising theme into separate sessions, namely, "Merchandising Through Research," "Merchandising Through Public Relations" and "Merchandising Through Service" the tempo of the convention set a fast pace. The subjects covered a wide range of warehousing activities from the work of The Refrigeration Research Foundation down to the merchandising activities of the National Assocation to its members.

A sad note marred the opening session when it was learned that General Richard Donovan, vice-president of Alford Refrigerated Warehouses, Dallas, Texas, had passed away suddenly in this room February 7, while attending his first NARW convention. He was 63 years old.

Officers and Executive Committee

National Association Refrigerated Warehouses

President, Arthur N. Otis, Merchants Refrigerating Co., New York, N. Y.
Vice-president, Fred F. Alford, Alford Refrigerated Warehouses, Dallas, Tex.
Treasurer, J. L. Gagini, Omaha Cold Storage Co., Omaha, Nebr.
Executive Vice-president, William Dalton, Washington, D. C.
Secretary, W. M. O'Keefe, Washington, D. C.

Executive Committee: P. D. Burrill, Boston, Mass.; Harry Foster, Cincinnati, Ohio; W. A. Kopke, Chicago, Ill.; W. A. Moore, New Orleans, La.; E. E. Seymour, Detroit, Mich.; H. W. Wilson, Philadelphia, Pa.; E. M. Burns, Portland, Ore.; G. F. Dodson, San Jose, Calif.; H. A. Gross, St. Louis, Mo.; C. E. Simmon, Oklahoma City, Okla.; J. P. Johnson, Washington, D. C.

First Timers' Breakfast

Activities of the refrigerated warehouse meetings of the convention got under way at an early hour Tuesday morning when a "First Timers'" breakfast was held to which all NARW members were invited. It was sponsored by the "Pacers." The chief pacer or chairman of the "Pacer" committee, Garth Shoemaker, gave a talk, setting the pace for the program which was to follow.

NARW Corporate Business Session

THE opening session of the convention devoted chiefly to the reading of reports and convention business convened Tuesday morning under direction of President Edgar M. Burns, Terminal Ice & Cold Storage Co., Portland, Ore.

President's Address

In presenting the annual report of the president, Mr. Burns said that the year had been one of progress, of the culmination of plans started years ago to modernize and activate the association. This seems like a simple thing, but when one has to consider the tremendous territory covered by the membership, and the many different and honestly controversial areas served, he said, simplicity becomes lost from the scene.

It was with considerable pride, he said, that they could look back over a year in which they had accomplished so much. They had established a well-knit organization with competent leadership and properly staffed with cooperative employees. They had moved their headquarters to a location of which they had reason to be proud. They had established a record for public relations that is the envy of many groups.

Feeling well satisfied, though not entirely content, with the year's activities and accomplishments, Mr. Burns recommended for 1949 a continuation of the 1948 program in its entirety because, he said, it needs more than one year's trial.

This association is your future, he concluded. There is nothing strange in this statement because this association is your industry. It represents you in every possible and conceivable manner. I charge you with the responsibility of cherishing your association—nurturing it to its ultimate fulfillment of the needs of our industry. However, remember that the ultimate is never final as far as association activity is concerned and that progress goes on forever.

Wm. Dalton, Washington, D. C.
Executive Vice President, National Association of Refrigerated Warehouses

Report of Treasurer

Treasurer Fred F. Alford, Alford Refrigerated Warehouses, Dallas, Texas, reported that the Association's audited report showed a balance as of January 1949 of $40,000. Expenditures during 1948 had exceeded income by $6,000. Treasurer Alford pointed out that in effect there had been a saving of $3,000 as the budget was set up to expend this additional amount in inaugurating the expanded activities of the association the past year. Anticipated revenue for 1949 is $62,000 with a budget of $61,000.

Edgar M. Burns, Portland, Ore.
Retiring President, National Association of Refrigerated Warehouses

Report of Executive Vice-president

The report of the executive vice-president, prepared by William Dalton, was presented in mimeographed form. This report reviewed, in detail, the accomplishments of the past year.

During the year, the report stated, 29 new members were added, 19 regular and 10 associate members. The Membership Information service department had been expanded through inauguration of new membership services, new sources for executive office information files and publication of association bulletins. A new 1949-50 directory had been published and distributed to all N.A.R.W. members and to shippers, traffic men and sales managers connected with perishable foods organizations. The annual AWA Yearbook had been published with a report and proceedings of the 57th annual meeting at Atlantic City in 1948.

The official "Washington Listening Post" had been active through constant and regular studies of government and industry releases, analyzed as to their effect on members. All meetings of allied groups in government divisions where warehousing interests were involved were attended regularly and cooperation and information furnished when necessary to government individuals and government agencies such as Departments of Commerce, Agriculture and Labor Cooperation with, and close attention had been directed to the Economic Cooperation Administration; working closely with Armed Forces on Joint Armed-Services Commercial Storage objectives including establishment of joint combined services in case of an emergency; legislative and governmental contacts developed; active membership maintained in appropriate trade groups for industry benefit, contacts and information.

Other public relations included establishment of regular refrigerated warehousing departments in allied trade publications and contributions to publications and magazines reaching customers; special issues of industry and related trade magazines were given cooperation. (This included

NARW Convention "Side-Lites"

Election of new members of executive committee were in conformity with recently adopted by-laws. This year three chapters elected committeemen prior to the convention, South Pacific, Southwestern and Missouri Valley. J. P. Johnson, Washington, D. C., was elected by the convention as committeeman-at-large.

A large display of all types of forms, occupied an entire side of the convention hall and attracted considerable interest. Public relation presentations for employee training, financial statements and other association public relations brochures were included.

Several associate NARW members employed board displays to illustrate their products. These included the Armstrong Cork Co., Lancaster, Pa.; Refrigeration Engineering Co., Los Angeles, Calif.; Moto-Truc Co., Cleveland; C. T. Hogan Co., Inc., New York.

Leon Bailey, Secretary Pacific States Cold Storage Warehousemen's Association was presented a testimonial at the annual banquet in appreciation for the successful arrangements made for the meeting under his guidance as General Chairman of the Committee on Arrangements.

A. B. Efroymson, Cleveland, Ohio, "sat the convention out" in a snow bank somewhere near Laramie, Wyo., and had not arrived when the convention adjourned.

Paced by Chief Pacer Garth A. Shoemaker, the Pacers proved they were a committee of action through their contribution to the program in general and the excellent attendance at both the Pacer "first timers" breakfast and luncheon meetings.

Edgar M. Burns, retiring president, executive vice-president Dalton and headquarters staff were the recipients of many congratulatory references for the excellent convention program.

Mr. and Mrs. Harlan J. Nissen received a tea service at the annual dinner on his retirement as AWA president.

Attendance figures at the AWA Convention were placed at 700.

Appropriate of the "modernization" and streamlining of the warehouse industry, Harlan J. Nissen, retiring AWA president and president-elect Clem Johnston made their formal appearance at the annual dinner via a fork lift truck.

As a token of international good will, retiring president Burns of NARW, retiring president Nissen of AWA and president-elect Otis were presented a "Har" each by Shib Chander Kumar of India. A "Har" is a decorative medallion worn by presiding officers in India.

Almon E. Roth, principal speaker at the Pacer luncheon has had a distinguished career as an attorney and well known labor consultant. He served as comptroller of Stanford University from 1919 to 1937 and was industry's representative on President Truman's 1945 Labor Management Conference.

President Burns established a near record, or came close to doing so, when he made over thirty trips during his administration contacting N A R W Chapters, attending allied association meetings, and other groups in spreading the story of N A R W.

H. C. "Dutch" Diehl, secretary and director T R R F provoked some constructive thinking in his "dollar and cents" evaluation of personnel and physical research facilities available for the benefit of the refrigerated warehousing industry through The Foundation. The estimate based on indisputably conservative figures approached the vastness of some of the estimates in the national budget.

Good public relations through the daily press was evidenced by the amount of space given to the activities of the N A R W convention in the San Francisco papers. N A R W press headquarters did an efficient job in channelling the daily releases.

The Pacific States Cold Storage Warehousemen's Association and the California warehousemen arranged a full program of activities for the ladies of the convention consisting of a fashion show, scenic drive, luncheon and tea.

the special convention issue of ICE AND REFRIGERATION); constant watchfulness on all media for erroneous facts and prompt answering on a vigorous, positive basis. This included cooperative publicity and advertising with related and supplier groups such as the Armstrong Cork "ad" in the November 20 issue of the Saturday Evening Post (four-color illustration of this advertisement also was reproduced in the January issue of ICE AND REFRIGERATION).

Listing the accomplishments of Committees, the "Pacer" Committee came in for special mention as the association's overall public relations committee and its activities during the past year had been many and varied. One of its important accomplishments had been to prepare a "Summary of Achievement" for presentation in an effort to obtain recognition for the association from the "Jury of Awards of the American Trade Association Executives." This summary which closely follows the "Ten-Point Program" adopted at the 56th annual convention of N.A.R.W. in Cleveland in 1947 is published in full on another page of this issue.

New executive offices were established where staff operations have been revamped in keeping with expanded activities. The executive offices are also serving as headquarters for the American Warehousemen's Association and, as such, have responsibilities for general A.W.A. affairs.

Regional activities have included close contact with local, state and regional groups affiliated with, or having common interests in the National Association, also close cooperation with regional chapters and chapter meetings.

Mr. Dalton concluded with the expression that this report represented the highlights of an interesting year, and that the members were to be congratulated upon the effective and active interest of the officers, executive committee members, and committeemen of the association. While it has been a year of achievement, there are more to come. Now, more than at any time, the report ended, the industry needs the unified thinking and effort possible in a great National Association representing a great industry.

Amplifying this report, Mr. Dalton said that it might be more objective at this time to look forward than to look backward because they knew what had happened behind them, but they could only conjecture for the future. Therefore, he asked that it be read with one eye on it and one on the future of the association.

Commenting on the convention program, he said it had been conceived for the specific purpose and thought of providing information that would enable the members to more fully and profitably conduct their business affairs. He then reviewed and commented on the various talks, the discussions and other features of the program. He again paid tribute to the officers, the committee chairmen and to the members of the association for the splendid support that had been given the association officers during the past year.

Reports of Standing Committees

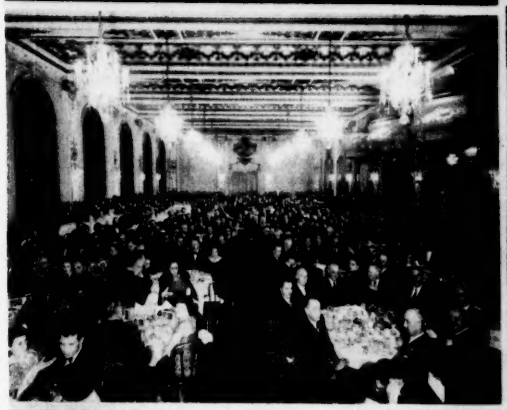
The reports of standing committees including those representing Legislation, Insurance and Safety were presented at this session.

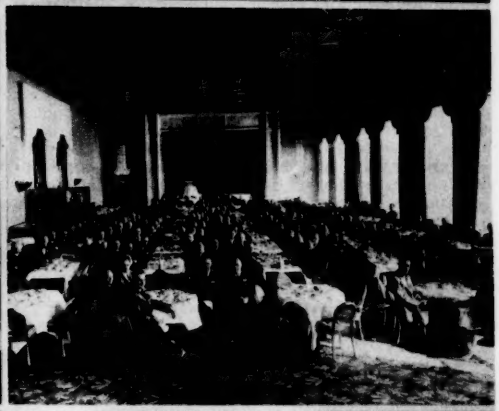
Report of Legislative Committee

Reporting for the Legislative committee, J. P. Johnson of Washington, D.C. said that while the legislative committee for the year 1948 had little to report in the manner of accomplishment with the advent of the 81st Congress, it had built up an available file of contacts for use if, and when needed. With the new Congress, the succeeding legislative committee will find its work fairly well laid out. The report then reviewed some of the current legislative problems as follows:

The Refrigerated Warehousing Industry

Picture Story of NARW Convention Activities





Upper left: Two "Old Timers" in warehouse business for 49 or more years pictured with A W A past president Harlan Nissen. Left, P. C. Hyson, Omaha Cold Storage Co., Omaha, Nebr.; right, Edgar S. Stanley, Star Truck & Warehouse Co., Los Angeles, Calif.

Upper right: Speakers at Pacer luncheon Wednesday noon. Left to right, Edgar M. Burns, past president N A R W, Portland, Ore.; F. J. Becker, president National Association Frozen Food Packers, Oakland, Calif.; Almon E. Roth, labor consultant, principal speaker; Garth Shoemaker "Chief Pacer", Elmira, N. Y.

Center left: General view of 58th annual A W A dinner, Wednesday evening.

Center right: "Pacer" luncheon Wednesday noon.

Lower left: Board of experts at Town Hall Forum, with Wm. Dalton, executive vice-president, as moderator. Experts are, left to right, A. E. Roth, R. M. Hagen, H. C. Emerson, P. V. Henningsen, L. A. Bailey, F. J. Becker, F. S. Krug, Jr., C. E. Simmon, F. D. Newell, Jr., and Garth Shoemaker.

Lower right: Retiring president Harlan Nissen and president Clem Johnston of A W A make formal entrance into banquet room with aid of fork lift truck.

Continuation of consumer credit control with additional authority to control bank credit; continuation of export controls with additional authority to enforce them; a continuation of priorities and allocation of controls over transportation with authority to impose similar controls over scarce materials.

Regarding labor, of prime importance is the pending repeal of the Taft-Hartley Act and re-enactment of the Wagner Act with modifications providing a ban on jurisdictional strikes and unjustifiable secondary boycotts, and upon ending the use of economic force to decide issues arising out of contract interpretation and the power to settle or prevent strikes in vital industries which effect the public's interest. These recommendations were endorsed at the Atlantic City convention and this will be followed in connection with this legislation.

The President's request for 6 billion dollars additional taxes, mostly to come from corporation earnings, clearly show the trend toward increased spending and increased taxes and no mention has been made of the cost of government nor has there been any proposal presented for economy in governmental expenses. The fact that there are more than 2 billion federal civilian workers on the government payroll, staggers the imagination. This number has been increased by more than 110,000 during the first eleven months of 1948. The Hoover commission on re-organization will soon submit its report and full endorsement of this report was recommended.

Activity under the Hope-Flanagan Act was characterized as threatening and dangerous in its projects of promoting market re-locations in the name of Market Research to reduce cost of distribution and this activity, it was pointed out, might well be grossly unfair to present existing market and storage facilities.

Regarding state laws, the report stated that these obviously must be watched by members in their own states. Uniform state refrigerated warehousing laws are greatly to be desired. It is generally conceded that the State of New York has a refrigerated warehousing act which can serve as an excellent pattern and this act was recommended to members in individual states.

In the discussion following Mr. Johnson's report and because of the urgency of the matter, the Association authorized him through the resolutions committee to file a brief with the House Committee on Labor and Education requesting exemption of the industry because of the vital importance of its operations. Mr. Johnson was commended for the work his committee had done.

Insurance Committee

In the absence of Richard R. Klinck, New York, the report of the Committee on Insurance was presented by Charles E. Eells of New York.

The first meeting of the Committee had been held in September 1947 at which time a project to determine what types of insurance should be carried by the warehouseman was discussed and approved. The committee accepted the services of Marsh and McLennan, Inc., insurance brokers, in a consulting and advisory capacity and it was agreed to limit the study to that of obtaining a fire insurance rate reduction for refrigerated warehouses on a nation-wide basis. For this purpose a questionnaire was prepared by the committee, response to which was very good and an analysis of the completed questionnaires was begun.

During the year, the need for Warehouseman's Legal Liability Insurance became very apparent following several casualties in cold storage warehouses which resulted in substantial claims against the warehouses backed by court decisions. The committee has been working on the problem of obtaining this form of insurance through domestic brokers and insurance companies, but to date has arrived at no solution.

Summary of Achievements—

THE following Summary of Achievements prepared by the National Association of Refrigerated Warehouses was presented in a bid or recognition for the Association from the Jury of Awards from the American Trade Association Executives.

Our Summary

(Refer to NARW's original "10 Point Program")

We have attempted to show you "Our Story" from the beginning. Not to the end, because it is a plan for constant and continuous action. It will probably never be complete, because each year brings new developments—new problems, and new answers.

But, this is "Our Story." This is what we have done in one year. Of course,—we are proud to present it.

Naturally, we believe we are on the right track; particularly because we stop and review occasionally to make certain that we have not wandered too far afield. For instance, take our "Ten-Point" program.

1. We HAVE developed press relations and service i news outlets regularly and, we believe, *constructively*. Over 5,000 column inches of *known* space in papers and trade publications are in our scrapbook.

2. Dozens of favorable articles HAVE been written and "bad publicity" HAS been avoided on occasions, because we are becoming regarded as a source of proper information about our industry and its functions. We HAVE been able to correct erroneous statements and impressions as a consequence.

3. Our relationships with other trade groups—particularly those who are close to us and among whose members are our members' customers—HAVE been developed greatly. They have been added to our new, streamlined bulletin service "Cold Facts." They are on our "general release" list. They are appreciative.

4. Our Legislative Committee HAS provided much intelligent information through its appeal to our membership. This information has permitted, and will permit, us to help create and advise proper officials and agencies in cases of need for "modern legislation" and liaison with governmental departments.

5. Proper information about our industry HAS been supplied to legislative authorities from time to time. Continual contact has been maintained for this purpose.

6. Our every effort IS made with the thought that it is our job to "elevate the standards of the industry."

7. Our "Industry Betterment Program" IS being extended by the Pacers and by a fast growing majority of our membership.

8. Programs already started HAVE been either consummated, or ARE in the process of development, further growth, or completion.

9. "Customer's education" IS being taken care of through the various media already described.

10. The promotion and development of greater regional activities IS evidenced by what you have already seen in this brochure. (Exhibit K-1)

The objective we set out to accomplish is being adhered to; the obstacles in reaching the objective are being surmounted satisfactorily; our plan of action is complete—at least for the time being; and our members' interest and cooperation assure us of reasonable financial assistance to carry on.

Report of Safety Committee

A report of the Safety Committee, prepared by A. R. Shepherd of Chicago, and presented by A. F. Winston of Chicago reviewed safety data and experience in the refrigerated warehousing industry which showed that frequency of accidents is considerably out of proportion to the hazards involved. In regard to severity rate, the picture was a little better but gives no reason for complacency.

Regarding safety work for the future, probably the first and greatest step is to develop a sincere interest on the part of management which will bring a willingness to follow through and see that the necessary work is accomplished. Then responsibility must be placed on one individual in each organization to set up and direct a full program of accident prevention.

Fortunately the road toward reduced worker injuries, lowered accident costs and better overall operations has been well marked by other industries which found themselves in the same situation and demonstrated that great improvement is possible. Some years ago, these industries joined with others faced with similar conditions and formulated a remedial program which has resulted in much more effective safety methods.

Concluding, the report said that with continued neglect the present situation in regard to injuries may continue to grow worse. The way to improvement has been completely marked and demonstrated in use by other industries. The methods are relatively simple but any program must be based on the desire of management to accomplish results and its willingness to see the program through.

This report will be published in full in a later issue.

Chapter Recognition

Several chapters reported their activities during the past year. Reporting for the North Atlantic chapter was H. C. Emerson, Bridgeton, N. J.; Southeastern, T. E. McCrary, Memphis, Tenn.; North Pacific, J. R. Goodfellow, Seattle, Wash.; Missouri Valley, F. D. Newell, Jr., Minneapolis, Minn.; Southwestern, J. K. Dozier, Houston, Texas; South Pacific, G. F. Dodson, San Jose, Calif.; Great Lakes, P. G. Kuehn, Milwaukee, Wis.

Merchandising Through Research

VITALLY concerned with providing warehouse customers better service through factual information, it naturally followed that the Merchandising theme of the meeting would get off to a good start with the subject of "Merchandising Through Research," which was covered at the Tuesday afternoon session. H. C. Diehl, director of The Refrigeration Research Foundation, acted as chairman. Mr. Diehl stated that good public relations involved a community of efforts—production, packaging, storing and distribution and if all the efforts through the various channels are good, then good public relations are the end result.

Make no mistake said Mr. Diehl, technical knowledge in a practical way is important to the customer and he wants it "Make Science the Method—Make Service the Motive" he pointed out was good practice to adopt.

Speakers on the program representing good customers of the warehouse business emphasized the necessity of the warehousemen being thoroughly familiar with the technical skill involved in storing perishables. They stated that the refrigerated warehouse industry was recognized as having one of the foremost industry research organizations in The Refrigeration Research Foundation.

The Restaurant Field

Col. Paul B. Logan, Director of Research, National Restaurant Association, Chicago, pointed out the relationship of refrigerated warehouses to public feeding groups. More than three quarters of the food used in the serving of 65 million meals a day to the public feeding industry is perishable, he said. Because of the limitations of the use of mechanical equipment in restaurants, effective savings cannot be made by mechanization; therefore prepared frozen foods are looked upon as a method to reduce labor costs in public eating places. He also pointed out that inter-industry research collaboration is desirable and necessary and that TRRF offered that kind of customer cooperation.

The Frozen Food Field

Thos. W. Rector, vice-president General Foods Corp New York, said he was in an advantageous position to talk to warehousemen as a boss because his company was a large user of refrigerated facilities.

He admonished his listeners first and foremost to "know your business." He felt that every customer enjoyed having good public relations with his vendor and good service. He said he expects to receive his merchandise returned from the warehouse in as good conditions as when stored.

Technical knowledge should be part of the executive's job and certainly the warehousemen must know the answers to give customers on temperatures. Technical knowledge, he said, is the best salesmen you can employ.

Continuing, he said products are being refrigerated today that never went into storage twenty-five years ago. And too, much has been learned about various methods of food preservation supplementing the other, for example dehydration and refrigeration. This is the type of technical knowledge warehousemen can provide customers and thereby do a much better merchandising job through research and public relations. Research he pointed out "furnishes facts" and such facts make money for both warehousemen and storer.

Practical Values of Research

President-elect Arthur N. Otis, presented the paper of Paul B. Christensen, Merchants Refrigerating Co., New York. Mr. Christensen said too much of the valuable information provided TRRF members, was not being used to the fullest advantage. As an example of "money in the pocket-book" information being provided, he pointed out, that his company was seriously considering maintaining lower temperatures in freezer rooms for poultry. The research of TRRF on proper poultry packaging and its published findings substantiated that poultry could be properly stored at the temperatures they were maintaining.

Mr. Christensen's paper paid tribute to the regional training conferences conducted by TRRF, and as a consequence of thirteen of their men attending, he felt their warehouses were being operated on a more scientific basis.

Another research project which is beginning to benefit them is the study on shrimps and evidence of this work is now being felt in additional storage business. So too will recent findings on storage of peanuts and dried fruits.

In summing up, Mr. Christensen said "no warehousemen can use yesterday's tools, today and be in business tomorrow." When occupancy goes down, new products must be looked for to fill warehouses. Research does pay off.

At the request of members of the TRRF, Director Diehl repeated his talk before the Refrigeration Research Foundation for the benefit of NARW members, on evaluating the Foundation, reported elsewhere in this issue.

Merchandising Through Public Relations

Wednesday Morning, February 9

INCREASED service through better public and community relations was the subject on Wednesday morning's session as the members considered the problem from the warehouse customer's viewpoint; how to improve employee relationships and building good will through better community relations.

Public Relations are in the Center

F. J. Becker, president National Association of Frozen Food Packers and in charge of northwest operations for Honor Brand Frozen Foods, pointed out that good inter-industry public relations is imperative in influencing consumers' good will.

To get his thoughts across, Mr. Becker suggested that they consider the whole industry in the form of a wagon wheel with a hub, spokes and rim. The packers can be considered the hub because they are the starting point of the industry. They take the raw materials from the farms, they add material and labor in their plants and turn out the finished product. This is the center of the frozen food business.

At this point the service companies come into the picture in the form of the spokes of the wheel. Each spoke is important; important to the hub and to each other spoke. Packers need and must have the public cold storage warehouses. They also need and must have transportation facilities to carry the product to the warehouses and to the market. They need the farms to produce the raw product.

They need the supply and equipment companies to supply the equipment and materials necessary to turn the raw product into a finished product. Brokers, distributors, retail stores and other outlets are needed to distribute the product and make it available to the consumer. There are several other spokes to the wheel, all mighty important in helping to make this wheel complete.

One of these is industry research, a very important spoke for we must be continually searching for better varieties to pack, better methods of processing, better types of packages, more adequate facilities, better methods of storage, more adequate transportation at lower temperatures and better methods of distribution and sales to consumers. Yes, research is a very important spoke in our wheel. Only a few packers are equipped to do research on any of these problems so they have to call on the experts in the field of research. The Refrigeration Research Foundation headed by Director Diehl is far ahead of the industry in research, and it is my hope that he can be made available to the packers also, at least in an advisory capacity. We call on the various colleges for research and the Regional Research Laboratories, especially the Western Research Laboratory at Albany, Calif.

Bankers are another very important spoke in this wheel and I am sure they will agree with me that certain public relations activities with respect to the financing of our industry would be helpful to them.

The rim of this wheel is the users of the product, the consumer. The last handler of frozen foods.

Now, to show you how big this wheel is, let me tell you that in 1944 there were 557 million pounds of frozen fruits and vegetables consumed, while in 1946, only two years later, almost one billion pounds of frozen fruits and vegetables were consumed. During 1947 the industry settled down somewhat for there was only 700 million pounds of frozen fruits and vegetables sold, but in addition to these items there were also over 300 million pounds of other items frozen, such as fruit juices, fish, meat, poultry, pre-cooked foods and many other specialties.

So the present volume of the frozen foods industry in pounds of frozen products exceeds one billion pounds. To get the one billion pounds down to a figure more readily visualized, let's reduce it to cars of frozen foods. We then have approximately 17,000 rail cars of finished products which the packers turned over to your public cold storages and your industry handled in and out of your plants all over the nation. In fact, your industry handled the product actually about four times which is equivalent to approximately 68,000 cars.

I said that the packer was the hub of the wheel and that the finished product for 1947 was one billion pounds of frozen foods. Let me develop this another way. Let's think of this one billion pounds of frozen foods as one billion packages of various sizes and types. Each package is an individual public relations contact between the packer and the consumer, or let's say between the hub and the rim of the wheel.

To show you the importance of most of the spokes in the wheel, I think you will find that this package is handled a minimum of six times after it leaves the packers' plant, and before it is sitting in the kitchen of Mrs. Consumer. If anyone of these six or more groups of people fail to adopt in its handling what they already know about proper handling, then the public relations contact with the industry by the consumer is minimized. It may be a complete disappointment and build up heavy sales resistance. Every handling by each group is important because any one of the six may be the handling that spoils the product. Each group must not only understand how to handle the frozen product, but do it, and I am not just talking about warehousemen either.

Good Handling Necessary

I am including in my thinking, packers and all other handlers of the product as it comes into the plant, and through all of its other handlings clear into the pot on the kitchen stove. Good handling is what will make this business grow twice or more its present size. It takes several good packages to offset the effects of one bad package that got into the consumer's kitchen. It is most certainly very important to you warehousemen because it is my understanding that a very large proportion of your revenue is derived from the handling of frozen foods.

Mr. Becker also announced and discussed the All-Industry Frozen Food Convention and Exposition to be held in Chicago, March 6-10, details of which are published on another page of this issue.

Public Relations are Human Relations

Discussions following Mr. Becker's talk were conducted in panel form by industry leaders. Roy M. Hagen, Los Angeles Cold Storage Co., Los Angeles, Calif., in presenting the subject, "public relations with employees" said that employees by nature are critical of the boss's actions. Employee relations are the base of the entire public relations program, he pointed out and the soundest advice to any employer is that he be sincere with his employees.

Mr. Hagen recommended that every employer should see that the physical facilities are conducive to good employee relations, such as clean lockers, clean lavatories, warm change room for freezer room employees, good equipment in good working order.

In commenting on the latter suggestion he said that in his plants they have made it a practice in so far as possible that specific equipment is assigned to specific employees and this practice has proven an incentive for better maintenance and better "housekeeping." This regulation applies to the engine room also.

In discussing safety as an important part of employee relations, Mr. Hagen recommended that safety rules should be developed with employees themselves and in so doing, they have a definite interest and understanding of the program. He considered it advisable in their plants that the safety engineer be a member of the engineering staff, rather than from the personnel office. An engineer, because of the nature of his job, is in closer working contact with the man.

Employee relations he continued are based on fundamentals which can be classified as the "desire of every individual." These desires are:

1—To be recognized as an individual
2—Wants to receive credit
3—Normally is desirous of striving for advancement
4—Wants to know requirements of next job so he may prepare himself.

As a consequence of this last "desire" Mr. Hagen's company conspicuously posts bulletins outlining job classifications and requirements. They have found this method of informing employees has reduced "gripes." Each employee knows that they are "screened" every six months for job reclassification.

Medical reports are important in Mr. Hagen's opinion. A close check has disclosed that "top men" in his organization are those individuals with the best physical records.

"Open House" family parties will contribute to better plant maintenance he suggested. His company has found that "pride of workmanship" is constantly displayed by employees as a consequence of such family parties.

If he were to ascertain what type of employee relations existed in a plant, concluded Mr. Hagen, he would ask the man at the "bottom of the ladder." That man is a true reflection of the employer.

Human Relations Affect Public Relations

Speaking on the same subject, Harold C. Emerson of Bridgeton, N. J., pointed out that all human relations affect public relations and this means that every human business contact has a bearing on public relations. He then discussed the subject in some detail in its relations to employees, customers, banks, with superiors and with union representatives.

He said that in his company, relations with employees are cultivated with periodic meetings with the office manager and plant supervisors at which such topics as courtesy on telephone, handling and storing of merchandise, general plant housekeeping, rate structures, and any changes in policy or procedure that may come along. This information is then handed down through the organization with the idea that if a man knows why he is doing a thing a certain way, he will do it better.

He said they try to teach their people to take responsibilities and become capable of making their own decision. They have found in this connection that each person is different and has to be treated in a different manner. In this age of liberalism and propaganda regarding the American way of life, he said, anyone who has a group of people working for him has an opportunity to influence these people's thinking in the right direction if he has their confidence.

Regarding customers, Mr. Emerson suggested that the basis of creating good public relations among this group is based on the simple facts of courtesy. Requests on the telephone are taken care of promptly, letters are answered promptly, inventories sent out on time, delays are reduced as much as possible and, in general, the relations are so maintained that customers feel that that particular warehouse is a good one to do business with.

Regarding the banks, their main effort is to handle warehouse receipts so that the banks' interests are fully protected. In this connection, he said that in a number of instances an educational program, particularly with reference to warehouse receipts, is needed.

Regarding public relations with superiors, periodic reports are issued with regard to merchandise, truck shipments, rail shipments, and general occupancy and any other information which they should receive. Just as information is handed down through the organization, they try to pass pertinent facts up though the organization, thus establishing human relations with superiors the same as with employees.

Regarding relations with union representatives, he said, their union contracts had been negotiated without rancor by using a "cards on the table" policy. The company's policies are explained to them and they explained their problem. After some discussion and meeting of demands is arrived at, a contract satisfactory to all is drawn up.

Employee Public Relations

Directing his attention chiefly to employee public relations, Paul V. Henningsen of Portland, Ore. pointed out that during the past several years industry has come to realize the vital role the employees play in the operation and prosperity of its business. Many large industries have embarked on educational programs for their employees because they feel that with the high cost of doing business with the prospects of even greater cost facing them in the future, their only salvation is efficient and cooperative use of their manpower. This they feel can best be accomplished by selling the employee on the importance of his job.

Only a small percentage of refrigerated warehouse employees know the size and importance of the part industry plays in the National economy. He suggested, therefore, that some effort be made to let employees know the part warehouses take in cooperating with civilian government, the Army and the Navy on their food problems and enlighten them on the refrigeration research program which is assisting the food industry in the improvement of its product, through education and research. The employee thus enlightened will then have a new respect for his position and can be justly proud to discuss among his own individual group the importance of the industry for which he works.

Public Relations are Community Relations

As discussion leader on the forum of building good community relations, F. S. Krug, Jr., Cincinnati Ice Manufacturing and Cold Storage Co., Cincinnati, Ohio, said he was endeavoring to create a new and revised consciousness as to the extreme importance of each individual's participation in the affairs of his own community.

In furtherance of this objective, Mr. Krug said he believed that the theme of this convention, namely "Merchandising" is one that they have too long neglected. They have never really attempted to sell their service. The industry has sold individuals who were looking for storage space, but what have they done to sell the public on storage space? They have gone their own way for years, perfectly well satisfied with themselves, in fact in a most complacent way, standing on their policies, without any regard for the needs of the customers or the community. They have arbitrarily set opening and closing hours to suit themselves without considering how those hours might fit into the overall picture of perishable food distribution. They have set rates and special charges, which is their perogative, but have they tried to work out with the customer ways and means of his operation to keep charges to a minimum?

They have placed heavy penalties on the small storer, he said, which have hampered him in his operations. They have forgotten when they were small and struggling and that perhaps five years from now, this same small storer might become a big one if they can help keep his head above water at the present time. What have they done to better understand the problems of their customers?

To be civic minded now is almost as much a part of management responsibility as meeting the payroll. No matter how good a salesman you are, and most warehousemen are operators, not salesmen, contacts are as important as the ability to sell. To have contacts with the proper people, the proper executives with whom you are on friendly terms, is better than half of the battle.

Press relations are also a vital and integral part of community relations. Make it an unfailing rule to give any reporter immediate attention. Let the Press know that you are always available, always appreciative of their interests, and that evading embarrassing questions might be misinterpreted. In such an instance ask the reporter to let you call back in a few minutes in order to marshal your thoughts and figure out just what you want to say. In all instances reiterate your remarks so that there is no danger of being misquoted or better still give the paper a written statement. If your plant is regarded as valuable to your city in every way, if your employee relationship is good and

everyone who deals with you thinks you are an upright useful citizen and you have through community relations established yourself, you then have gained recognition from the press and you will receive far kinder treatment in controversial matters from them than otherwise.

During the war, when the government was asking to conserve all foods, his company was ordered to send two cars of potatoes to the incinerator. The custom would not bother sorting out the good ones and decided to dump them all. One of our afternoon papers is located only a short distance from our warehouse and the managing editor looks out of his office directly on our platform. When he saw the city garbage trucks backed up to our dock and saw load after load of potatoes being dumped therein, he post-haste sent a reporter to get the full story together with picures. The editor was greatly incensed over the matter, but the write-up of the story was done in such a way that not only were we cleared of any part of the deal but a special paragraph explained in detail the important part that cold storage warehouses played in the war effort. Only our close connection from years' association with the press could have made this possible.

Mr. Krug said he thought this a very good axiom—"The public thinks more in terms of human beings than an impersonal corporation." Favorable recognition of the company's chief executive will create good will for the enterprise and all its interest. The company's employees, customers and stockholders are interested and pleased about the favorable publicity of any enterprise in which they have an interest. In reaching a position in community affairs, the name of his company is tied in with his own and the public, knowing the man, feels that it is familiar with his company.

And finally, Mr. Krug concluded, keep in mind the younger executives in your organization. As you grow older a younger group of customers and citizens are coming up. You, yourselves, cannot reach them, so it is necessary that you begin placing the younger men in position to be known by the new group. Public relations in every phase must be long range, alive to the future. Get your young executives in Junior Chambers of Commerce, luncheon clubs and like organizations and they will begin building the proper community relations with the coming generation.

Contacting Community Groups

As a member of the panel, F. D. Newell, Jr., Minneapolis Cold Storage, Minneapolis, Minn. related the value of a "speaker's directory" made available by the Chamber of Commerce of his city for small communities. Requests are made from these communities for speakers and various types of community programs and he has had an opportunity as a listed speaker of telling the story of the refrigerated warehouse and its importance to the nation by personal contact wih a number of influential community groups. He cautioned his listener not to get too involved in too many ventures which may result in neglect of business.

Community Relations

Concluding the panel discussion on community relations, Clyde E. Simmon, Big 4 Ice & Cold Storage Co., Oklahoma City, Okla., among other things, makes good use of the materials handling equipment installed in their plant to develop relationship with the community.

At the conclusion of the war, Mr. Simmon said, they began making plans to triple their capacity. This was accomplished and the new addition was ready for use in July, 1948. The new construction is a single story building, 20 feet high. There are no coils. Carrier units provide all the refrigeration in both coolers and freezers. They use pallets and fork lifts. A system of shelves is provided in part of the cooler space in order that they may get full use of the height of the room on products which cannot support much weight, such as potatoes. A fleet of skids raised, lowered and transported by hydraulic jacks is used for placing fresh products received to be frozen. These skids are taken direct to the freezer where the skids are dropped and left until the products are frozen. All this is done to avoid labor within the freezer.

Mr. Simmon related this because he thought it had a direct bearing on one phase of community relations. Of course, he added, he did not pose as an expert on community relations and in that he said he probably was not much different from most cold storage men. It is quite probable, however, that most of those present do more to build good community relations than they realize. They belong to service clubs, are members of the Chamber of Commerce and they take part in civic projects such as the community chest drive or they may be interested in schools, colleges, or one or more of the youth training programs. All these things naturally are helpful in establishing good community relations for any business.

Industrialists have learned that a healthy business needs more than customers and employees. It needs understanding friends. The best place to make friends is at home where your company means the people who work for it. The people are real, personal and tangible. They live across the street. They belong to churches and clubs. They ride the buses and their children go to school.

By far the greater percentage of his company's business comes from large concerns, Mr. Simmon stated. These concerns are understanding because their problems are not too different from his own company's problems. All they ask is good service and courteous treatment at a reasonable cost.

Since completing their new facilities they have made a special effort to speed up the handling of customers at the truck dock. There had been no serious complaints but because he was in very close contact with this operation, Mr. Simmon said, he knew complaints were justified and furthermore knew that as they get further away from a war period and into more competitive conditions the customers are expecting quicker handling of trucks at the dock. A marked improvement has been made in this service but they have plans to improve it still further. Of course palletizing helps in this speed up materially.

Mr. Simmon said that his company had a wonderful opportunity to "show" off, as it were, to the public—customers and the general public alike have shown a great interest in being shown through the new cold storage building and watching the palletizing and fork lift operation. He has made this a special order of business, not with large groups but with customers in particular and then small groups from schools or clubs.

Pacers Set Fast Pace at Annual NARW Convention

PACERS suitably identified by ribbon badges contributed greatly to the success of the 58th NARW Convention. Headed by Chief Pacer, Garth A. Shoemaker, Hygeia Refrigerating Co., Elmira, N. Y., the Pacers got off to a fast start with the "First Timers" Breakfast on Tuesday, February 8. All NARW members were invited to the breakfast honoring "first timers."

Pacers W. J. Mills, Terminal Refrigerating Co., Los Angeles, and M. W. Young, National Ice & Cold Storage Co., San Francisco, were co-chairmen. The speaker's rostrum was suitably decorated by carved ice figures furnished by National Ice & Cold Storage Co.

Harlan J. Nissen who by designation of the Pacers, is "grandmother" of the group, the organization having been established during his regime to further the 10-point program of the association, delegated Shim Chander Kumar, Saharnpur Cold Storage, Ltd., Saharnpur, India, to start the first foreign Pacers committee. Mr. Kumar was attending his first NARW meeting as a member.

Mr. Shoemaker in his talk said "A lot of Americans today don't know what America is. The biggest merchandising job for today is to sell America to Americans." He pointed out that with all the subversive ideas in the country today, business leaders must realize that they are going to have to fight to preserve the principles of American free enterprise. This, he said, was in his opinion more important than any superiority in armaments,—at least at this time. The program of the convention, he said, was quite in line with this theme inasmuch as the program had been built around the idea of merchandising refrigerated warehousing. In this job, he said, most of the refrigerated warehouse industry would have to become salesmen and merchandisers. But, in connection with business and as a part of your business, the American business man must learn to sell America to Americans, to dramatize to them and to the world why the American system of free enterprise is best.

James Mussati, executive manager California State Chamber of Commerce and principal speaker, emphasized the value of association membership. Since the start of civilization he pointed out, men have banned together for security, advancement and a sound society. Today, he said. associations are invaluable in the development of research projects, service to the community and in building leadership.

Closing the breakfast session, Mr. Shoemaker announced that details of a contest for Pacers for a Pacer slogan would be forthcoming soon from headquarters.

Pacer Luncheon—Wednesday Noon

Because of the prominence of the speaker, members and guests of the Merchandise Division and National Association of Refrigerated Warehouses were invited to the Pacer luncheon Wednesday to hear Almon E. Roth, practicing San Francisco attorney and President, San Francisco Employers Council, San Francisco. Mr. Roth recently returned from Washington where he appeared before the Senate Committee hearing arguments on proposed new labor legislation.

In a forthright presentation, Mr. Roth repeatedly pointed out that "sound industrial relations are good public relations." He said the Pacific coast was making some progress by adopting this philosophy and that probably this area had some of the toughest labor situations to meet, the nation being well acquainted with the communistic influence on the waterfront and its infiltration into some labor organizations. He recognized what business men may be up against under these conditions, but it is a continuing problem that requires their attentions and continued effort in building sound industrial relations. He pointed out one large industrial organization, employing 200,000 people. Estimating that each employee has a circle of about 35 friends and acquaintances, it is readily seen that their influence may have a far reaching effect.

Mr. Roth said he was amazed at the reluctance of business men to testify for the Taft-Hartley law which he stated was most equitable to labor and management, and business certainly should make itself audible or suffer the consequences.

Public Relations Town Hall

Wednesday Afternoon, Feb. 9

A PANEL of experts was ready for the Wednesday afternoon session to engage in a "shirt sleeve" discussion on some very basic problems concerning public relations, employee relations, community relations, government relations, industrial relations and a number of pertinent problems presented at the morning session. The lively discussion brought out interesting points, based on actual experience, and some of the discussion "was off the record."

The panel discussion was under the capable leadership of Executive Vice-president, Wm. Dalton, as moderator and the panel consisted of Messrs. F. J. Becker, R. M. Hagen, H. C. Emerson, P. V. Heninngsen, F. S. Krug, Jr., F. D. Newell, Jr., Clyde E. Simmon, all speakers on the morning program. Additional members of the panel included L. A. Bailey, G. A. Shoemaker and the principal speaker at the "Pacers" luncheon-meeting Almon E. Roth.

Much of the discussion was directed to Mr. Roth and some of the subjects indicated that American business is justified in viewing with alarm the progression towards the "welfare state."

On wages and hours it was pointed out that the recommended increase to a 75 cent minimum can easily mean a $1.00 minimum and affectts not only an approximate one and one half million employees as the government claims, but can affect nearly 7 million. Also such adjustment of a minimum wage would necessarily have a "chain reaction" up the entire wage ladder.

Secondary boycotts were pointed out as a "monopolistic practice" used to force closed shop recognition and peril the shipment of perishables at a great loss to the community. One incident related the movement of a car of pears, consigned to a dock for foreign shipment which were allowed to rot because the car had been marked "hot pears," owing to some labor difficulty in loading.

Mr. Roth cautioned that some demands for so-called "fringe benefits," welfare funds and pension plans involved considerable increases in hourly rates which, were not readily apparent. He suggested careful checking, especially in the face of declining markets and tighter business conditions.

In a question directed to Mr. Becker as to how the warehouse industry can help the packer of frozen foods, he pointed out that continued research on behavior of storage products and careful handling of stored package commodities were two essentials.

In answer to a question on transportation, Mr. Emerson remarked that it was the practice of their company to refuse to deliver stored commodities ot customers' trucks if such equipment sent for the product was not equipped to transport frozen foods, unless the customer specifically authorized it. A 'phone call to the customers explaining the situation has resulted, he stated, in better customer relations.

In a question on the use of materials handling equipment, it was pointed out that little or no objection was made by employees but on the contrary the work was made easier for the warehouseman and permitted the use of slightly handicapped workers, as well as permitting older employees to handle their job efficiently.

In a brief discussion on warehouse liability, it was recommended that executives should frequently check on their responsibility. It was rather amazing, stated one speaker, to learn of the lack of knowledge existing among warehousemen on this vital subject.

Merchandising Through Visual Education, Cost Controls, Materials Handling

Thursday Morning, February 10

"CLINCHING the case for merchandising" figuratively speaking, the Thursday morning session considered a number of pertinent subjects that must be considered in the refrigerated warehousing industry to do a complete "merchandising job." Such subjects as merchandising through visual education, cost controls, materials handling and merchandising mindedness of the association itself concluded the liberal education the members had received from this session and the preceding days.

Merchandising by Visual Education

"Food for America" a color sound film showed how Beatrice Foods was telling the story of their food products and refrigerated warehouse facilities to America. Ray Waters, commentator, pointed out that this public audience, through the use of sound equipment now owned by civic organizations, schools, churches, clubs, associations and others like community centers, numbers an audience of 12 to 15 million people anxious to secure such films.

Merchandising Through Cost Controls

A subject of the utmost importance to the warehouse industry since its earliest inception is the matter of cost controls. In an excellent presentation by William C. Baker, Produce Terminal Cold Storage, Chicago, he illustrated how his company is proceeding to definitely determine the cost of storage and the cost of handling. His paper included suggested list of expense items to be included in handling; setting up the handling accounts; formulae to establish storage base rates. Mr. Baker's paper will be published in full in the April issue.

Merchandising Through Materials Handling

"Operation Frigid" presented a merchandise story on the use of materials handling equipment through the use of a movie illustrating the equipment employed in the new Quincy Market Cold Storage & Warehouse plant in Watertown, Boston, Mass.

Herbert Farnsworth in commenting on the film pointed out that the use of fork trucks could be greatly improved in expediting in and out movements of merchandise if customers would palletize shipments. He stated this was particularly true where platform space was limited and would strongly recommend the encouragement of this practice.

Palletized Operations

Walter Thompson, Modesto, Calif., discussing palletized operations in one-story warehouses said that any use of such equipment depended on the plant lay-outs and the basic commodities handled. Mr. Thompson then discussed three types of one-story plant lay-outs which lend themselves, in some measure, to the variety of handling methods. His talk was illustrated with a number of slides.

One of the most important features in any operation involving fork trucks and pallets, he said, is to allow the machines full mobility to do the work. There is no question but what fork trucks can handle merchandise at fantastically low cost per ton figures but this can only be achieved by removing barriers and making the path of the machine the most simple and direct possible.

K. N. Friend, National Ice Cold Storage Co., San Francisco, Calif., pointed out that a number of features can be included in fork trucks to meet physical property requirements and recommended warehousemen obtain full information when considering installing materials handling equipment.

Merchandising by the National Association

To show that the NARW is awake to the necessity of proper merchandising procedure, J. H. Colquitt, assistant to Executive Vice-president Dalton outlined the distribution of the NARW Year Book now in the mails.

To make sure that the book was placed in the hands of all users and potential users of refrigerated storage space, membership directories of all allied associations were obtained and from these lists, some 500 more concerns in the perishable foods trade were added to receive the 1949-50 directory. But, even with this added circulation they felt that the circulaiton could be considerably increased with resulting benefit to the industry.

Intra-Industry Relations

Credited with giving a clear and sound summation of the present position of the refrigerated warehousing business today, President-elect Arthur N. Otis, Merchants Refrigerating Co., New York, vigorously emphasized in his address on intra-industry relationships that "our troubles have not been that we did not know what was right, but we conveniently forgot that business for cold storage plants was not created like items that are manufactured by other industries." Mr. Otis's paper appears in full elsewhere in this issue.

General Forum

National Emergency Plans

NOT unmindful of their responsibility to the government in the event of a national emergency, Vallee O. Appel, Fulton Market Cold Storage Co., Chicago, and past-president of the NARW led the discussion on national emergency plans at the Thursday afternoon session.

He described his attendance as a representative of the warehouse industry at a joint orientation conference of the nation's leading industrialists, military authorities, government and labor officials to study at first hand the preparations the government is making to assure peace by preparedness.

The purpose of the conference, he related, was threefold (1) to acquaint management and labor with preparations for any national emergency; (2) what steps are being taken to complete this program and (3) to inform business that as their government is preparing, so should business.

Mr. Appel pointed out that the industry would do well to have a constructive program ready to present to the Quartermaster department showing definite space commitments to be set aside for military requirements if an emergency arises. Certainly such a procedure would be more desirable from an economy standpoint than to have the Army construct its own warehouses.

Mr. Appel paid tribute to John Hawkins, Western Market Centers, U. S. Army Quartermaster Market Center System, San Francisco, for the excellent job he did for the Army and refrigerated warehousing business during World War II, and subsequent to that time.

Pointing out the requirements of the military forces, in time of emergency, Mr. Appel stated that it is estimated that the requirements for each individual of the Armed Services would be 35 lbs. of perishables per month.

He strongly urged unified action by the industry in immediately proceeding to adopt a workable plan for presentation to the military authorities. Concerted action, he pointed out, would be making better customer relationships as all customers would then appreciate that definite commitments had been made for the security of the nation.

Resolutions

The report of the resolutions committee headed by L. L. Oldham, Merchants Cold Storage Co., Minneapolis, Minn., with J. P. Johnson, Washington, D. C. and A. F. Winston, Chicago, as members introduced resolutions covering opposition to repeal of the Taft-Hartley Law; opposition to proposed powers granted to the Secretary of Labor in contemplated bill; clarification of "overtime on overtime"; adoption of report of the Hoover Commission. The report was unanimously approved and copies of resolutions ordered sent to the respective governmental agencies.

The convention then adjourned to meet jointly with the Merchandise Division in the final session to conclude the AWA Convention.

The Refrigerated Warehousing Industry

Refrigeration Research Foundation Fifth Annual Meeting

Dr. H. C. Diehl, Berkeley, Calif.
Director, Refrigeration Research Foundation

Officers and Executive Committee

Chairman of the Board, Dr. Samuel C. Prescott, Boston, Mass.

President, Vallee O. Appel, Chicago, Ill.

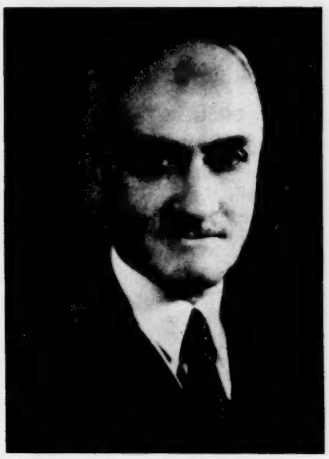
Vice-president, Arthur N. Otis, New York, N. Y.

Treasurer, Wm. A. Sizer, Chicago, Ill.

Secretary and Director, Dr. H. C. Diehl, Berkeley, Calif.

Asst. Secretary, E. G. Erickson, Chicago, Ill.

Executive committee: Vallee O. Appel, Chicago; P. D. Burrill, Boston; R. C. Muckerman, St. Louis; Harlan J. Nissen, Los Angeles; Arthur N. Otis, New York; Wm. A. Sizer, Chicago; Arnold Hampson, Providence, R. I.



Vallee O. Appel, Chicago, Ill.
Director, Refrigeration Research Foundation

MEETING the day prior to the convention of the National Association of Refrigerated Warehouses, the Refrigeration Research Foundation held its fifth annual meeting at the Fairmont Hotel, San Francisco, Calif., Sunday, February 6.

In opening the meeting, Dr. Prescott, Chairman of the Board, said it was significant that the NARW convention was being held in the city across the bay in which the TRRF headquarters are established. He was of the opinion that research was well described in a motto to the Foundation displayed in the TRRF office—"Make Science the Method, Make Service the Motive." He further stated the Foundation is proud that its research findings can be interpreted for the benefit of the industry and mankind.

The report of the Director, he said, is evidence of its advancement over its five year period of existence and that TRRF has rightfully taken its place among leading industry research organizations. He stated that even if government enters into a changed social philosophy, they will need guidance of private enterprise.

Summing the value of research he quoted the words of the late Dr. A. D. Arnold, "These are the three requirements in research: the spirit to adventure, the wit to question and the wisdom to accept and use."

President's Address

In an inspiring address, Vallee O. Appel, Chicago, president of the Foundation discussed the position of TRRF upon completion of its fifth year of service. He said that the refrigerated warehousing industry was proud to have given birth to "a likely child; reared it through its formative period; and could not afford under any circumstances to permit it to enter an age of senility."

He discussed frankly the necessity of setting up a sound program of assured annual income. He pointed out that the executive committee had established dues on the basis of forty cents per 1000 cu. ft. which they felt would be equitable to all. However he continued this method might be subject to further consideration or change.

President Appel emphasized that TRRF had amply justified its existence and to retard its activities at this time would be unthinkable, rather they should plan definitely on continuing to go forward. He hoped this meeting would adopt a definite plan to insure the financial future of The Foundation.

Treasurer's Report

Treasurer Wm. A. Sizer, Chicago, in presenting the financial report showed expenditures for 1948 exceeded income by approximately $11,000 as compared to excess expenditures of approximately $6,500 over receipts for 1947.

He pointed out that in setting the forty cent dues rate the Executive Committee had anticipated that income would be satisfactory if all members paid on that basis. A research program should be planned on a long range basis and it was the hope that members would pay on the five (5) year plan as originally set up.

Following the president's address and treasurer's report, a lively discussion brought out not only the value of the service the TRRF is providing but necessity of expanding its activities. It was stated that too often members were losing the value of the amount of information TRRF was providing by failing to have some one in their organization carefully digest every release and apply the fund of information furnished to their own individual operation.

As examples of direct monetary returns to be secured

by members, it was pointed out, the results of W. T. Pentzer's studies on the storage of dried fruit and J. G. Woodruff's research on refrigerated storage of peanuts and peanut products, provided opportunities of increased storage business of these commodities. A number of members suggested that the word contribution as applied to dues to TRRF was a misnomer. Rather it should be considered in the light of insurance or investment.

Another advantage TRRF offers to the industry is that the government in expanding its research activities would work as a collaborator, rather than a dictatory, if an industry has a sound research program in operation.

Directors Report

H. C. Diehl, director of the Foundation presented his formal report in an attractive forty page brochure covering an outline of major research projects undertaken during the five year period of the Foundation's establishment; short term investigations; regional training conferences; researches under exploratory investigations; technical service to industry; bibliography of published material and a list of grants-in-aid.

Director Diehl stated the printed report was self-explanatory and in a thought-provoking address evaluated the worth of TRRF on a dollars and cents basis. He stated that he had been prompted to explore this intriguing subject because he believed it would conclusively show that the value of TRRF is not reflected in a treasurer's report. He emphasized that in the presentation of his analysis, he had been purposely ultra-conservative and had not relied on his own judgment, but had drawn on the experience of recognized authorities. Some of the figures he presented as to facilities available to TRRF were as follows, re-emphasizing that the value he had placed upon them would be immediately recognized as rediculously low:

Value of Foundation's Scientific Advisory Committee 19 men at $3500.00 each annually	$ 66,500.00
Human and professional capital invested in these men	3,800,000.00
Working facilities for these men	500,000.00
Operating Funds for these men	190,000.00
Seven TRRF Board Members at $5,000.00 annually	35,000.00
Twenty-one TRRF Industry Members at $5,000.00 annually	105,000.00
TRRF Library (at present replacement cost)	25,000.00
Regional Training Conferences: Attendance of 600 at all conferences; approximate expenditure for attendance $200 per man	120,000.00
Savings on claims against TRRF members, because of authoritative information available	25,000.00
Problems solved for members annually	20,000.00
Influence on government researches (example: Influence of Industry Advisory Commottee on R.M.A.)	100,000.00
Other factors to be included in a true evaluation would include conferences with industry customers, pointing out their responsibility in proper preparation of commodities for storage.	
Public Relations	
Value of facilities of institutions conducting TRRF researches.	

To sum up his evaluation, Director Diehl arrived at a conservative estimate of the annual potential additional business that can accrue to the refrigerated warehousing industry through the completion of only seven of the many projects undertaken. These included the result of research on dried fruits, shrimp, citrus fruits, frozen milk, lemons, peanuts, eviscerated poultry. He placed the value of this additional business at ten million dollars annually.

The membership present voiced their unanimous approval of the Director Diehl's presentation and requested that it be given the widest publicity possible as one of the strongest selling points for TRRF.

Board of Governors

Members of the Board of Governors representing the public were re-elected as follows: Dr. Eugene C. Auchter, President, Pineapple Research Institute, Honolulu, Hawaii; Dr. Laurence V. Burton, Executive Director, The Packaging Institute, New York City; George A. Horne, Consultant on Refrigeration, New York City; Dr. Louis B. Howard, Head of Department of Food Technology, Agricultural Experiment Station, University of Illinois; Col. Paul P. Logan, Director of Food Research, National Restaurant Association, Chicago, Ill.; Dr. Samuel C. Prescott, Dean Emeritus of Science, Massachusetts Institute of Technology, Cambridge, Mass.; Dr. William C. Schoenfeld, Dean and Director, Oregon State College and Oregon Agricultural Experiment Station, Corvallis, Ore.

Representing industry, the following were elected for three year terms expiring in 1952: Vallee O. Appel, Fulton Market Cold Storage Co., Chicago, Ill.; Wm. A. Sizer, Produce Terminal Cold Storage Co., Chicago, Ill.; L. M. Ashenbrenner, Great Lakes Terminal Warehouse, Toledo, Ohio; R. M. Hagen, Los Angeles Cold Storage Co., Los Angeles, Calif.; Arnold Hampsen, Merchants Cold Storage and Warehouse Co., Providence, R. I.; John Q. Adams, Manhattan Refrigerating Co., New York, N. Y.; W. J. Karnes, Chicago Cold Storage Warehouse Co., Chicago.

Technical Discussions

The meeting was concluded with a discussion of two research projects carried on by other research institutions in cooperation with the Refrigeration Research Foundation. These were on the Refrigerated Storage of Dried Fruits and Air Purification in Refrigerated Storage Rooms.

Refrigerated Storage of Dried Fruits

A report was presented by W. T. Pentzer of the U. S. Department of Agriculture, Fresno, Calif. on Refrigerated Storage of Dried Fruits. This report was based on a project aided by the Foundation and conducted by the Bureau of Plant Industry, Soils and Agricultural Engineering, U. S. Department of Agriculture.

General conclusions of the study were that storage of dried fruits at 32 to 40 F. and low humidity is satisfactory and that low temperature storage controls browning also eliminates insects and protects flavor, texture and color. Results of the test on various dried products including raisins, figs, prunes, apples, pears, peaches and apricots were given.

Air Purification in Refrigerated Storage Rooms

A report on the study of Air Purification in Refrigerated Storage Rooms was presented by A. Van Doren, Washington State College and Washington Agricultural Experiment Station, Pullman, Wash. The speaker stated that the extent to which the two major factors of temperature and relative humidity can most effectively be modified in refrigerated storage rooms are already known and are being used to good advantage by the industry. More recently study had been undertaken to find out the effect of the nature of the storage atmosphere on fruit. Since fresh fruit utilizes oxygen and gives off carbon dioxide, concentration of these two gases affects the stored fruit. When such concentration is controlled, the technique is called "controlled atmosphere" Air purification is made by a reduction in concentration of the natural gases that come from stored fruit as well as undesirable odor that may be present in the storage air.

(Continued on page 71)

The Refrigerated Warehousing Industry

Now — Where To?

By Arthur N. Otis
President, National Association of Refrigerated Warehouses

RELATIONSHIPS to be good must be sound, even sound things must be sold. To sell something, one must not only know what he is talking about but believe in it himself. We are selling services which are carried on in plants of high dollar value. This has always been so, it was true 60 years ago, 40 years ago, 20 years ago, and it is more outstanding now than at any previous time. If we looked at the records of many companies in our industry, we would find that over a period of years their capital has gradually been dissipated by paying out as earnings, the depreciation reserve, instead of conserving these sums for improvements on new plants.

In selling to ourselves the need of high standard "Intra-Industry Relationships", our troubles have not been that we did not know what was right—our troubles have been some of the following: We conveniently forgot that business for cold storage plants was not created like items that are manufactured by some plants. For a good many years we forgot, or did very little about, organized reasearch effort to develop new items which would be improved or the quality better maintained by cold storage. If many of us knew what our costs were, the realization of those costs was numbed or forgotten in the scramble to get our share, or more than our share, of the available merchandise for cold storage, regardless of what our costs were or whether it was good for the long range condition of our balance sheet.

Must Assure Profits

I do not mean to say that some of our actions were bad because they were selfish. Perhaps, I could better put it this way. *They were bad because they were not sufficiently selfish to make certain that in the long run business was being handled at a profit.* You can see from the balance sheets of some companies in our industry that items which were really replacements, renewals, and repairs were added to the capital investment. There are other companies in which properties were written up by reappraisal to take into consideration increased new construction costs when, of course, for tax purposes, no additional depreciation was allowed. In the long run some of these practices tempted us to charge less for our services than a sound accounting plan would have dictated and, so, gradually we lost: first, basic soundness; next, we did not realize exactly what we were bringing about until too late; and finally, we could not even sell ourselves on the full value of our services.

It is very hard to change a system which has prevailed for many years. When the last war came and labor and material costs increased by leaps and bounds, we were caught with handling rates far below our cost of operation. We are still paying for this mistake and, now that occupancy has declined in many parts of the country and the turnover of merchandise in warehouses has increased, we are paying a high penalty, particularly in the distribution areas, for the overall combination of either not knowing our true handling costs or not heeding the sign posts provided by our accountants and engineers.

This, I believe, is one of the basic difficulties with "Our Intra-Industry Relationships." Which one of us would think it sound or be able for long to continue to sell $5 for $4? Yet, we do that or worse when we sell our services for less than they are worth just to obtain higher occupancy. This puts us in the position of either selling something, the real value of which we do not know, or of knowingly selling something for less than its real value.

To sell any product or service on a sound basis it must be available at the lowest possible cost for that classification of service and, simultaneously, the best service possible must be provided. To reduce costs in our industry would probably require additional investment in such things as new locations with higher percentage of freezer space, more mechanical handling equipment and, in many cases, new plants. Before talking further about costs let me attempt to draw a parallel. It is a normal one. It is found on every segment of our economy, in every industry existing in free but private trade channels. Sometimes the so-called larger operators, the firms who carry on either multiple unit operations or unusually large single unit operations, are looked upon as a "bugaboo," a cloud on the industry or an evil which has to be tolerated.

My reason for mentioning this is that every cold storage company, no matter how large or how small, has one primary problem to solve, the triangle of our success, the *customer, labor* and *capital*. All three must have devoted and relentless attention. The small and the large company have the same problem except that the larger the operation the more difficult the problem and the greater chances of getting snarled in red tape in trying to solve it. Whether big, medium or small, our problem is the same, the parallel is there. Size makes no difference, except that the problem, though identical, grows with the size of business. Our success will be in proportion to the effectiveness of our attitude toward the three corners of this triangle. We are all in the same boat, the bigger it is the harder it rows, the more difficult to guide and to make progress against the stream, current, wind and eddy—with a storm brewing overhead in the form of government competition with taxpayers money.

Company Competition

Recently, we have been mainly concerned with government competition in new construction. Soon private capital will be competing. *It is high time we began to compete with ourselves.* By that I mean, it is time that each company began to compete with itself in the matter of new methods and new construction. To do this requires capital. If we had the depreciation we have paid out in dividends or if we had the funds we have dwindled away by selling our services for less than cost, we would now be able to do the same things which some competitor may do at any time when building costs start downward.

We have gone a long way with unsound practices. We have heard that it is of no use to know what our costs are because we cannot charge more for our services than the lowest price which any competitor charges. This statement is true because we have not known, or have been unwilling to face, what our costs are. Our cost figures have not, in many cases, been sound and accurate because we

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Paper presented at Annual Convention National Association of Refrigerated Warehouses.

have not kept all the component parts up to date. We have sold ourselves something we did not want to know about and, therefore, refused to believe.

The solution of improved "Intra-Industry Relationships" is based on sound costs and adherence to those costs. I still believe in the law of "supply and demand." I still believe in the "survival of the fittest" in business as well as in our personal lives. I still believe in Gresham's law that "bad money drives out good money" and that "bad business drives out good business." I still believe these are sound principles whether we like them or not. These natural laws have not been suspended.

Bad vs. Good Business

To illustrate that "bad business drives out good business," I have been impressed during my experience in the cold-storage business with the fact that there are still a few customers who ask for privileges; such as credits, rebates, and the like; and have been able to get them. These few customers go from one warehouse to another. In this business, as in many others, we are all going to lose an account now and then. If, when a customer asks a warehouseman to do something which is unsound, and the customer knows it will not be done, he will stay where he is or, if he goes to some other warehouse, he will do business in a regular way. In other words, if we take a customer away from another warehouse, we should make a good customer of him by doing business with him on regular terms.

It is our opportunity to see that the customer does not get free services or special privileges. One of the tests I always like to make in determining whether an account is profitable is to answer these questions: If all of our accounts, or a high percentage of our accounts, ask for the same preferred service or irregular performance which this account is asking for, what would happen? Would we do this for all customers? How many extra employees would we need? What would our accounts receivable total?

When we permit these few accounts special privileges, whether it is by allowing them to owe us for several months' storage charges or by allowing them to get away without paying for some extra services, we are helping those "irregulars" or "chiselers," or whatever you want to call them, to obtain an advantage over their competitors, who are our good customers. We have helped not only to make trouble in our own industry, but to bring down the average in a customer industry at the expense of our customers *who pay their charges without question year in and year out*. The names will differ in different cities but the tactics are the same; "bad business drives out good business," in our industry and in customer industries.

Where are we going with our old buildings? What are we doing, not only to get our costs down temporarily, but to improve them in the long run? We may have to write off our worst buildings because of high handling costs. With all expenses several times what they once were, interest on money borrowed no longer represents such a high percentage of total expenses. I am not too concerned about long range occupancy if we can effect enough handling and operating economies. *Some day* it will be necessary that all of our buildings meet the competition of new construction.

In 1878, Senator Benjamin Hill spoke before the United States Senate as follows: "But Sir, I have said I do not dread these corporations as instruments of power to destroy this country, because there are a thousand agencies which can regulate, restrain and control them; but there is a corporation we may all dread. That corporation is the *Federal Government*. From the aggression of this corporation there can be no safety, if it is allowed to go beyond the bounds, the well defined limits of its power. I dread nothing so much as the exercise of ungranted and doubtful powers by this Government. It is, in my opinion, the danger of dangers to the future of this country. Let us be sure we keep it always within its limits. If this great, ambitious, ever growing corporation becomes aggressive, who shall check it? If it becomes wayward, who shall control it? If it becomes unjust, who shall trust it? As sentinels on the country's watchtower, Senators, I beseech you watch and guard with sleepless dread that corporation which can make all property and rights, all states and people, and all liberty and hope, its playthings in an hour and its victims forever."

The conditions feared by Senator Hill, 70 years ago, are present now, in 1949. The Federal Government has been getting bigger and bigger. We must know its viewpoint and be able to tell ours forcefully.

Therefore, our position must be sound. Therefore, it is all the more important that each of us has a research division in his own company. You say you cannot afford it, you have it, at small cost, in The Refrigeration Research Foundation. Therefore, it is all the more important that we take good care of making effective by our support, our public relations representative—that representative is N.A.R.W. In the hands of these two organizations, N.A.R.W. and T.R.R.F., is our industry's future, yours, mine.

Thank You Gentlemen:

DURING its fifty-eight years, ICE AND REFRIGERATION has received many compliments, few of which have been published, but for our special pre-convention January number, we believe others will be interested in reading some of the comments received.

I have gone through the magazine and I think it is a very fine piece of work. E. M. BURNS, *President*
National Association of Refrigerated Warehouses

I have just reviewed your January issue. It's a honey! Our industry should be very grateful to ICE AND REFRIGERATION for the time and intelligent effort expended to make this issue possible. HARLAN J. NISSEN, *President*
American Warehousemen's Association

May I take this opportunity to compliment you and your associates on the outstanding job you have done on the January 1949 issue of ICE AND REFRIGERATION which devotes the larger part of its pages to the Refrigerated Warehousing Industry and its forthcoming convention in San Francisco. I shall read the various articles with marked interest.—J. R. SHOEMAKER, *President*.
Hygeia Refrigerating Co., Elmira, N. Y.

I have just gone through your January ICE AND REFRIGERATION and want to take this opportunity of telling you I think this is one of the best issues you have gotten out for many months. Your presentation of the warehouse industry in this issue should be highly commended and I think you should be very proud of the staff that put this book together under your guidance.
RALPH C. STOKELL, *General Manager*
National Cold Storage Co., Inc., New York

I want to compliment you on the pre-convention NARW issue of ICE AND REFRIGERATION. I think you have done an outstanding job. You have made a real contribution to the public relations program of our National Association.—
GARTH A. SHOEMAKER, *Treasurer*
Hygeia Refrigerating Co., Elmira, N. Y.

The Refrigerated Warehousing Industry

Training Key Civilian Warehouse Men For Military Supply Depots

PLANS are being completed for the April 1949 program of indoctrination training of key civilian warehousemen in Army, Navy and air force depots. This program is under the direction of the A W A Committee on Liaison with the Armed Services in Peacetime on which the refrigerated warehousing industry is represented by Vallee O. Appel of Chicago and C. A. Martin of Nashville, Tenn. Chairman of the committee is Charles E. Nichols, Washington, D. C., representing the Merchandise Division of the A W A.

The most important project of this committee has been the development and operation of a program of indoctrination training of key civilian warehousemen in the methods of operating armed service storage and supply depots. There is also a reciprocal program for training armed service key storage personnel in the methods of operating commercial warehousing facilities, thereby affording an opportunity for the two groups to exchange ideas to mutual advantage.

The Navy program will be from April 4 to 8, 1949. The Army program will follow from April 11 to 22, 1949. The Air Force program is also for a two-weeks course which will run from April 4 to 15. Details of these programs may be obtained from C. E. Nichols, Washington, D. C.

Based upon experience with the program conducted in October, 1948, an important change has been made in the conduct of the program. Arrangements for enrolling and participating in this April program may now be made by each warehouseman by writing directly to the commanding officer of the depot it is desired to visit and make arrangements directly without the necessity for going through centralized control offices.

A total of 42 warehousemen participated in the program conducted at 13 different depots during October, November and December of 1948 and their reports are almost universally enthusiastic regarding the benefits derived from the experience. The reports received by the Armed Service headquarters from their depots are also very favorable as to what they learned regarding their own operations from civilian warehousemen. Comments and criticisms received are definitely being used to increase the efficiency of depot operations and to improve the value of the course of depot operations and to improve the value of the course.

The facilities of the Armed Services for this program are numerous and well distributed throughout the country to take care of two or three times as many civilian warehousemen as have yet taken advantage of this opportunity. The industry can learn something of advantage from these large scale depot operations. What is perhaps even more important, warehousemen can help to improve the efficiency and reduce the cost of operating these government facilities with unlimited savings in future tax bills.

Cold Storage Holdings Delayed

BECAUSE of the earlier press date for this issue, cold storage holdings issued by the U. S. Department of Agriculture, normally published in each issue, have been deferred. They will be resumed again in the April issue.

Cold Storage Stocks of Selected Frozen Fruits and Vegetables

A REPORT issued by the Production and Marketing Administration of the United States Department of Agriculture shows that as of January 1, 72 per cent, or 92 million pounds, of the 127 million pounds of frozen peaches, raspberries and strawberries in cold storage were reported by container size. Last month 101 million pounds out of 137 million pounds were so reported. Coverage for individual items amounted to 63 per cent of the peaches, 83 per cent of the raspberries and 71 per cent of the strawberries which is not materially different from a month ago. Of the 92 million pounds of fruits for which packaging data were received, 25 per cent or 23 million pounds were in consumer size containers while the balance, 69 million pounds, was in the larger type packages. On December 1 the ratio of reported product in the different package sizes was nearly identical, indicating that during the month of December the out movement of both the commercial and consumer packaged fruits was in proportion to the volume held.

Stocks classified as to package size for the six selected frozen vegetables in store January 1 comprised 55 per cent of the total. Retail packages totalled 66 million pounds or 57 per cent of the 116 million pounds reported by container size. Coverage in January, and the percentage distribution of retail packages was unchanged from last month, but was 8 percentage points below the coverage last year this time when 50 per cent of the stocks were reported in retail packages. Frozen corn in retail packages showed the greatest change from last month by increasing from 40 to 44 per cent of the frozen corn classified. Asparagus in retail containers now 56 per cent of the total asparagus reported was 59 per cent last month, while spinach increased from 74 to 78 per cent. Consumer packages of frozen lima and snap beans and frozen peas were about in the same proportion to total stocks as last month.

COLD STOTAGE STOCKS OF FROZEN FRUITS AND VEGETABLES IN STORAGE JANUARY 1, 1949
IN PACKAGES OF ONE POUND OR LESS (000 OMITTED)

	Peaches		Raspberries		Strawberries		Asparagus		Beans, Lima		Beans, Snap		Corn		Peas		Spinach	
	Lbs.	%	Lbs.	%	Lbs.	%	Lbs.	%	Lbs.	%	Lbs.	%	Lbs.	%	Lbs.	%	Lbs.	%
New England	361	56	123	12	1,778	34	236	74	668	68	540	67	494	77	3,081	83	268	89
Middle Atlantic	684	25	298	6	2,954	21	372	46	2,584	39	2,643	53	1,052	27	5,415	44	1,019	75
East North Central	790	36	529	19	3,410	35	407	63	3,284	62	1,189	73	1,056	46	3,562	60	836	78
West North Central	434	30	351	13	2,270	35	215	49	1,451	47	463	50	686	52	3,886	75	288	80
South Atlantic	292	18	26	14	824	22	238	52	1,556	67	570	48	246	54	1,322	57	289	72
East South Central	33	21	1	14	81	4	2	29	68	92	.....	..	19	53	46	90	29	94
West South Central	225	44	87	52	781	26	57	70	615	87	303	92	182	76	452	84	283	86
Mountain and Pacific	1,372	36	848	11	4,201	28	561	58	6,310	59	2,751	75	1,877	47	12,093	58	729	79
United States	4,735	33	2,385	11	18,729	28	2,698	59	17,917	55	9,240	61	6,446	40	35,430	59	4,287	74

New Warehouse Directory Available

A NEW directory of public refrigerated warehouses has been published by the National Association of Refrigerated Warehouses. This book contains complete listings of all the services and facilities of some 450 public refrigerated warehouses throughout the United States, its possessions, Canada and eight foreign countries. It also contains similar listings of NARW associate members, suppliers to the refrigeration and perishable foods trade.

It is designed as a desk book for executives, sales and traffic managers and others interested in the storage of perishables. Listings are conveniently arranged alphabetically by states and cities for quick reference. Copies are available without cost or obligation only to those concerns actually engaged in the production, processing, transportation, storage and marketing of perishable foods. Requests should be addressed to the National Association of Refrigerated Warehouses, 608 Tower Building, Washington 5, D.C.

Ohio Warehousemen's Association

THE 42nd Annual Meeting of the Ohio Warehousemen's Association was held at Cleveland, Ohio, Saturday, January 18. Under the direction of President L. M. Ashenbrenner, of Toledo, Ohio, the regular order of business was followed, during which the reports of the president, treasurer, and other officers were made. Under the rules the Association elects two members to its Board of Directors each year and Directors so elected serve for three years. New members of the Board elected for the three year term beginning in January, 1949, were Wm. H. Hawk of Columbus and D. H. Overmyer of Toledo.

During the forenoon session there was a discussion of Ohio Workmen's Compensation Plan (Manual 8292) led by President Ashenbrenner. This proved to be most interesting and all members participated in the discussion.

The meeting was adjourned at 12:30 noon for the Association's annual luncheon which attracted the largest number for many years. Following the luncheon, members and guests listened to an address by William Harding, Assistant Regional Director, Wage & Hour Public Contracts Division, United States Department of Labor, whose subject was "Overtime on Overtime." Mr. Harding is an attorney, a very capable and interesting speaker, and is very well informed on the subject.

The subject was so absorbing that the discussion ran more than 30 minutes past the time allotted for this portion of the program and many real and hypothetical cases were discussed in detail. While the problems of warehousemen are quite similar throughout the nation, Mr. Harding recognizes that circumstances differ in almost every case and is reluctant to enumerate rules which may be considered to cover all cases. The policy of the Division, however, is to invite inquiry from any and all employers who may not be entirely clear as to their status. Mr. Harding furthermore states that there are numerous officers of the Department of Labor stationed throughout the nation and invites all of those who are interested to call upon the office nearest them.

The Association has for sometime considered the development of a publicity program, the purpose of which would be to emphasize Ohio as an area suited to the warehousing of all commodities being used in the area in which it is centrally located. S. C. Fulton, secretary-treasurer, reported in detail concerning ways, means and plans for such a program. Because of the numerous ramifications involved in a cooperative matter of this type, the question was referred to a committee for further investigation.

Officers Elected

The meeting was closed at 4:30 p.m. after which the newly constituted Board of Directors met and elected the following officers to serve the 1949 term:

President, Frank H. Prussa, National Terminals Corp., Cleveland, Ohio.

Vice-president, William H. Hawk, Neilston Storage Co., Columbus, Ohio.

Secretary-treasurer, S. C. Fulton, Cleveland, Ohio.

Board of Directors: W. Lee Cotter, Akron; Harry Foster, Cincinnati; Robert C. Greeley, Cleveland; and Arthur Post, Canton.

Mr. Foster was also named chairman of the Cold Storage Division, and D. H. Overmyer was named chairman of the Merchandise Division.

New York State Association of Refrigerated Warehouses

PLANS are underway for the annual meeting of the New York State Association of Refrigerated Warehouses to be held Thursday, March 17, at the Seneca Hotel, Rochester, N. Y. beginning at 10 a.m. The committee making plans for the day's program includes Wm. Scott, Ray Cash and Ed. Rogerson on arrangements, and John Berney, Richard Doncaster and Ed. Bishop on the program. The guest speaker will be Sam Fraser, executive secretary of the International Apple Association.

Members of the executive-legislative committees will meet Wednesday evening, March 16, at the hotel. New officers for the coming year will be elected at the annual meeting. The nominating committee consists of J. C. Posson, Richard Klinck, and Weston M. Rider. Luncheon will be served at noon for all members in the hotel.

Committee Appointed on Domestic Transfer and Storage

A COMMITTEE on domestic transfer and storage has been established by the National Security Resources Board under the chairman, Col. J. Monroe Johnson, Director of the Office of Defense Transportation. Under this general committee, five "task" groups have been created as follows: Railroad Transport, Chas. H. Buford, chairman; State & Highway Transport, Guy A. Richardson, chairman; Inland Water Transport, Lawrence C. Turner, chairman; Pipe Lines, Bruce C. Clardy, chairman; Warehousing & Storage, Col. Leo M. Nicolson, chairman.

Representing the refrigerated warehousing industry, J. R. Shoemaker of Elmira, N. Y., has been appointed as a member of the "task" group on Warehousing & Storage. A number of refrigerated warehousemen will recall that Col. Nicolson was wartime Director of Refrigerated Storage in ODT, and Mr. Shoemaker served with him as associate director in charge of refrigerated warehousing. Harold K. Osgood who was Mr. Shoemaker's assistant at that time and is now vice-president of the Fairfax Storage Co. of Kansas City, will serve as secretary of this "task" group.

Caine Joins National Cold Storage

R. C. STOKELL, general manager, National Cold Storage Co., New York, announces the appointment of Wilbur H. Caine as assistant manager. Mr. Caine, formerly general manager of Beinecke, Inc., is now located in the general offices of the National Cold Storage Co. where he will be pleased to greet old and new friends.

The Practical Refrigerating Engineer
Reg. U. S. Patent Office

OPERATING • MAINTENANCE • NEWS
QUESTIONS AND ANSWERS

National Association Practical Refrigerating Engineers

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Tulsa, Okla.

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435 North Waller Ave.
Chicago 44, Ill.

Recent Developments in Refrigerated Warehouses

By E. R. Hallowell

Vice-President in charge of Engineering,
Alford Refrigerated Warehouses, Dallas, Texas.

IN presenting this paper on recent refrigerated warehouse developments, it is desirable from the author's standpoint to limit it to personal experience, most of which has been gained in the operation of our present warehouses and the construction of the new Alford Refrigerated Warehouses which are just now nearing completion. It has been my privilege to have been associated with this project since its inception and to watch it grow from an idea to a vast project. We feel that we have incorporated some ideas—new, at least to warehouses—that might prove interesting and with this in mind, I would like to give a brief overall description of the entire project and devote some time to the cold storage, refrigeration and other items which may prove of interest.

The entire project consists of two parallel warehouses separated by a 100-foot wide paved street. There is also an office building containing some 70,000 square feet of floor area and a 400-seat auditorium. The two warehouses are approximately 250 feet wide over the loading docks, by 1650 feet long. The two buildings and street cover an area of approximately 20 acres. Running along the outside of each building is a double railroad track with switchovers. A total of 80 cars may be spotted along the two warehouse docks at one time on the inside tracks. There is a continuous covered dock 15 feet wide along both sides of each warehouse allowing car unloading from any point as well as providing truck facilities along the entire dividing street. Both warehouses are of one-story construction with ceiling heights averaging 25 feet and were built for mechanical handling of merchandise. It is intended that all items received for storage will be palletized and handled by means of fork-lift trucks.

Construction Methods

I would like to relate a few of the construction methods used as they are somewhat unusual. The warehouses are located in the industrial section of Dallas on a fairly level tract. After clearing the site, the area to be covered by the warehouses was leveled and filled as required and the earth thoroughly compacted. The fill was allowed to extend somewhat beyond the limits of the buildings and a trenching machine was brought in to excavate a trench 18 inches wide by an average of 8 feet in depth around the entire perimeter of the two buildings. Reinforcing steel was placed in the trench and a self-propelled concrete mixer of the road paving type filled the trench with concrete. Later the earth was removed from the outside of the walls down to street and track level, thus forming the dock walls for the buildings.

Next, the floors were poured with regular street paving equipment. The large area made it entirely feasible to use this type of machinery. The column bases for the building were poured at the same time, being at floor level and consisting of a thickened slab at the column points, reinforced and with anchor bolts for the columns imbedded in them at the time of pouring. The street was also paved at the same time. After this work was accomplished, we had a level paved surface to work from in erecting the building. The next step was to erect the steel framework of the building, which consisted of steel columns placed on 50-foot centers lengthwise of the building and on 55-foot centers across the building. These columns were connected by means of steel trusses.

Roof Construction

The roof construction consists of bar joists placed on approximately 30-inch centers. On top of each joist was fastened a 2-in. x 2-in. wooden stringer. The entire roof was then covered with Steeltex, a steel mesh with paper backing. Concrete was sprayed onto this to a depth of about 1-½ inches. The concrete was placed by means of the Gunite process. A dry mixture of sand and cement is placed in a "gun" operated under air pressure and containing a feeding mechanism which feeds the mixture into a flexible hose. The mixture is blown out through a rubber-lined nozzle at which point water is added. A great deal of time and labor is saved, since all mixing and feeding is done at ground level and the mixture is raised to the roof by air pressure through the hose. After placement by the nozzle, some screening is necessary to obtain a level surface. The roof deck was then primed and a layer of 15-pound felt placed in hot asphalt. On top of the felt are two layers of embossed aluminum roofing laid in hot asphalt. The top layer of aluminum was left exposed to obtain maximum heat reflection. This roofing was furnished by Reynolds Metals Co.

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Wall Construction

For the wall construction, vertical members similar to the roof bar joists were used. These were grouted in holes drilled in the concrete floor and welded to the steel trusses at the top. Wood strips were fastened horizontally across the vertical steel members and paper-backed wire mesh nailed to the strips. The same Gunite process was used on the walls as was used on the roof. Due to the fact that it is placed under pressure and cointains a minimum amount of water, the Gunite concrete is extremely dense and strong. As a finish, the last fraction of an inch on the walls utilized white sand and white Portland cement. This gives a uniform, almost white, outside wall.

Installation

Both buildings have insulation although at present only one is to be operated as a cold storage warehouse. Construction of the walls of the two buildings is the same. It had been decided that fill type insulation would be used and shredded redwood bark was selected as the type best suited for our needs. In all ceilings and walls a thickness of approximately 12 inches was provided so that any area may be used either as a freezer or cooler.

The ceiling construction is somewhat unique. Corrugated aluminum was purchased in sheets about ten feet long by the width between bar joists, which averages 30 inches. The bar joists are constructed with top and bottom members consisting of two angle irons back to back. The corrugated aluminum sheets are placed so that they rest between the bar joists on the top of the bottom angle irons. This gives a space of approximately 12 inches between the aluminum sheet and the roof deck for the insulation. The bar joists are submerged in the insulation. As previously stated, a wooden strip was placed on top of the bar joists and serves as a break between the steel joist and the roof.

For the inside walls, a second wall was built of Gunite by the same means as used for the outside wall and the space between filled with insulation. Before the placing of the inner walls, asphalt emulsion was used at corners and other places subject to vapor infiltration. As a complete vapor seal on the outside walls, the entire areas are sprayed with a double coat of rubber base paint. Since the areas are so large, it was felt advisable to do the sealing from the outside where it can be renewed and checked rather than from the inner surface of the outside wall where future access would be impossible.

No Floor Insulation

No floor insulation was used. The building is resting on a fill well above any possible water tables and it is our conviction that once under refrigeration, the dirt itself will form adequate insulation. This is borne out by the fact that for the past several years we have operated rooms totaling some 50,000 square feet of floor area with no insulation. These rooms range in temperature from 40 degrees Fahrenheit to minus 5 degrees F. Checks of these rooms have shown no excessive loads. The rooms now operating, as well as the rooms in the new plant, are all of large floor area so that losses at the edge of the room do not constitute an appreciable percentage of the total load. To operate a room without floor insulation, conditions of the sub-soil should be carefully checked for possible water tables and consideration given to other factors such as the size of the room, since losses might be excessive in a small room.

Engine Room

The engine room is located about the center of the cold storage building with cold storage rooms on both sides. The first freezer to go into operation is a single room the width of the building (220 feet excluding docks) by 200 feet long, containing approximately 1,100,000 cubic feet of space. Other cold storage areas are of the same general dimensions but are split into three rooms, the two outside rooms being coolers 55 feet wide by 200 feet long and the inner room a freezer, 110 feet wide by 200 feet long. Between the areas is a 50-foot wide work space across the building, providing access to the cold rooms and to either truck or rail dock. All rooms have in and out doors with clear openings eight feet wide by nine feet high to allow ample space for truck traffic in and out. These doors slide up and are left open during operating periods. Behind these doors in the freezers is a double set of air-operated flap doors to provide an air lock. For the coolers, there is a single set of flap doors.

The second building, while insulated for cold storage, will be used at present as a dry storage building. Part of this building will be air-cooled to provide storage facilities for semi-perishable commodities. A year-round temperature of approximately 65 to 70 degrees Fahrenheit will be maintained.

The engine room located in the cold storage building is 50 feet wide by 220 feet long and serves the entire project. All of the refrigeration equipment, electrical generating equipment, ice-making equipment and battery charging equipment for the fork-lift trucks, as well as shop and repair equipment, is in this room.

Refrigerating Machinery

The plant is driven by natural gas engines. Since Dallas is located in an area distributing abundant natural gas at low rates, it was decided to utilize this factor in the selection of equipment. The main refrigeration compression equipment consists of four Ingersoll-Rand XVG engine compressors. These units are V type natural gas engines. An extra crank and cross head is incorporated in the crank case and a piston rod extends from the side of the case. A horizontal double acting ammonia cylinder is bolted to the frame and operated by the piston rod, thus giving a compact engine compressor unit. Two of the main units are eight cylinder gas engines of 300 horsepower with four ammonia cylinders each, and two are six cylinder gas engines of 225 hp. each with three ammonia cylinders. The ammonia cylinders for high pressure work are 9 in. bore by 12 in. stroke and the booster cylinders for low stage work are 15 in. bore by 12 in. stroke. All operate at a speed of 350 rpm. In addition, there are two York 9x9 compressors belted to high-speed Continental engines and one Frick 9x9 compressor, similarly driven. These three machines are for stand-by and air-conditioning service. There are three generator units consisting of Ingersoll-Rand eight cylinder 370 hp. PVG engines driving Electric Machine Manufacturing 250 kw generators. These units will furnish power for auxiliaries and lights for the entire project.

Refrigerating System

The ammonia refrigeration system is split into four operating pressures. A 50 pound suction will be maintained for water chilling in shell and tube coolers for air-conditioning the office building and auditorium, and for air-cooling in the dry storage building. A 25 pound suction will be maintained for the shell and tube brine coolers and as an intermediate stage for the low pressure booster

suction. A 20 pound suction will be available for ice making and a zero pound suction will be utilized for the freezers, which will operate on direct expansion. The zero pound suction will be handled by the booster cylinders which will discharge at 25 pounds pressure through a liquid and gas cooler to the 25 pound suction line. The total plant capacity is 900 tons.

As an interesting sideline, the engine jacket water, which is in a closed system, will be by-passed in winter to the chilled water lines and circulated throughout the air-cooled spaces for winter heating.

There are nine Frick ammonia condensers of the horizontal multipass type with 1 ¼ in. tubes having a total surface in excess of 9,000 square feet. A total of 4500 gpm of water will be circulated. The cooling towers are located on a concrete basin across the rail tracks from the engine room. A Marley induced draft tower is used for the condensers and a Lilie-Hoffman forced draft tower is used for cooling water for the intercoolers for the engines. Between the two towers is a pump house containing all of the pumps for the towers. There are five condenser water pumps and three engine pumps as well as a jacket pump for the ammonia cylinders. These include one spare pump each for the condensers and engines.

There is to be placed in operation in the near future a 60-ton Vilter "pak-ice" machine which will manufacture ice for car icing. Since a large number of cars will be loaded, it is intended to have ice available for icing down refrigerator cars as needed.

The fork-lift trucks used in warehouse operations are battery operated and the chargers and battery charging space are located in the engine room, as well as repair facilities. The fork trucks have also proved very useful in the construction of the building. Some were purchased at the start of construction and have served to provide a type of roving scaffold. Platforms were built and fastened tc the forks so that it was only a matter of a few seconds time to place them at any elevation or location desired. They have been invaluable as time- and labor-savers throughout all phases of the job.

Cooling Units

A great deal of study and investigation was given to the type of cooling units to be used for the cold storage vaults. Pipe coils were objectionable due to the weight imposed on the building structure, space required, and defrosting problems, as well as the relatively high split between air and refrigerant temperatures unless excessive amounts of pipe were used. It was therefore decided to use some type of air unit to obtain desirable conditions, and after considerable investigation, "Recold" units manufactured by Refrigeration Engineering, Inc. of Los Angeles were purchased. These are small units employing the water defrost principle and utilizing extended surface. The design finally adopted consisted of hanging these units in groups of from five to twelve units arranged in a circle, blowing outward. By proper placement of these groups, it is possible to obtain complete air circulation in the rooms without the use of ductwork. The large freezer mentioned has a total of 48 units in six groups, two of twelve units and four of six units. To obtain high humidities a split of 7½ degrees between room temperature and refrigerant temperature was used as a basis of selection. Since the units were sized for peak conditions, the average operation is expected to be within five degrees.

The freezer units are operated full-flooded, each group having its own accumulators and float switch. Temperature control is obtained by the use of an Alco back pressure regulator on each group of units. This back pressure regulator is operated by means of a pilot thermal valve sensitive to the room temperature, thus maintaining at all times a constant room temperature at the highest possible refrigerant temperature and also utilizing full coil surface. As a safety precaution, the solenoid liquid feed valve and a solenoid in the back pressure valve pilot are connected to a master switch outside the room so that in the event of an ammonia break, all of the fans as well as the liquid flow to the units and the suction line may be shut off from outside the room.

The same air units are used for the coolers operating on cold brine. Temperature control is obtained by the use of Barber-Coleman motor operated valves and thermostats. Since each unit contains two fans, humidity can be controlled by cutting out individual fans and reducing the effective amount of surface used. Cooler room coil selections were based on a five degree split between average brine temperature and room air temperature.

Defrosting

Since the rooms are large it is impractical to bring in water lines and drains for defrosting. A tank truck is used instead. Consisting of a baffled water tank and pump, it is towed into the room and spotted under a group of units. The pump discharge is connected to the defrost water line and the return drain is connected to the tank. The pump is plugged in and the units defrosted. A convenient switch shuts off the fans of the units being defrosted.

Because of the long ammonia lines, it was necessary to allow for a considerable amount of contraction in the lines. This has been taken care of by means of Cook Electric bellows type expansion joints made of stainless steel mounted in the line at regular intervals. All ammonia lines have been sized for minimum friction. The calculated drop for the longest line (approximately 800 feet long) is less than one pound. In order to provide extreme flexibility all lines are sized so that any room may be used either as a freezer or cooler without the addition of ammonia lines.

Safety measures for plant operation have been taken wherever possible. High pressure cutouts are employed on all ammonia machines and dual safety valves are in use on the receivers and accumulators. The engines are protected by overspeed devices, oil pressure and water temperature cutouts. Automatic gas valves shut off the flow of gas to any engine when it is stopped.

A temperature indicating system is employed for the cold storage plant whereby temperatures at several locations in each room may be read from a central indicator located in the engine room. Indicator lights on the panel board indicate all pumps in operation. Thermometer wells have been placed wherever necessary for checking plant operation.

Mechanized Handling

The operation of the entire plant will be mechanized. Fork-lift trucks will be used in all operations. The project has been designed with a view toward transit storage and large scale operations. Merchandise being unloaded will be palletized at the cars and trucks and the loaded pallets picked up and stored in the various rooms. The one-story height of the buildings eliminates elevator bottlenecks. The continuous wide docks eliminate traffic jams. Merchandise can be handled swiftly and efficiently and with a minimum of damage. Relatively small crews can handle large quantities of merchandise. Since all palletizing work is done outside of the cold rooms, the work is less disagreeable and higher working efficiency is obtained. Since less muscular effort is required for mechanical handling,

men do not tire rapidly and more pleasant working conditions are assured.

The high lights presented in this paper have been more or less an aerial view of the Alford project. I have tried to bring out a few points of interest and give a general picture of the complete operation. It has been a sincere pleasure to be associated with the project and a pleasure to present some of the features here.

N.A.P.R.E. Question Box

NOTE: H. G. Venemann, Chairman of the Educational Committee, has agreed to answer through this column all questions asked by members of the N.A.P.R.E. Please send your questions to him care of Purdue University, West Lafayette, Ind.

Types of Surge Drums

Question No. 802: Given a choice, which is most efficient, a horizontal or a vertical suction trap (surge drum).—A.H.L.

ANSWER No. 1. Harry Phillips of Chicago Chapter No. 1 has kindly sent in the following answer to this question. He has had a great deal of experience in the design of surge drums.

"We prefer the vertical surge drums where it is practical to use them because of their simplicity. The vertical surge drum which must hold an estimated amount of surge can be smaller than a horizontal surge drum to hold the same amount of surge of liquid. The amount of liquid in the bottom of a vertical surge drum generally is less than with a horizontal drum. With a maximum velocity figure set by the designer, the surge drum itself probably will be smaller in volume than when the vertical drum is used.

"Horizontal surge drums provide the advantage of a greater liquid head on the coil or evaporator and are sometimes used because of this. The number of baffles placed in a horizontal surge drum of any length is greater than that generally required in a vertical surge drum and these baffles are used to prevent the liquid from flushing from one end of the drum to the other. I would not discourage the use of horizontal surge drums. They require more careful design than the vertical drums.

"We generally find that for a given job the horizontal surge drum requires a size or two sizes larger of pipe or tubing than the vertical drum to do the same job. This affects the cost and of course is a primary importance in selling the product.

"With regard to the matter of velocity, we like velocities of 100 feet per minute maximum for the gas when approaching close to the suction line connection.

"I trust the above will provide sufficient general answer to your question as any further discussion probably would verge on the matter of details of design which are not needed in this case."

ANSWER No. 2. Several articles on suction traps have been published by the N.A.P.R.E. in various editions of the Operating Data Book. The following references will be of interest.

Construction of Flooded Evaporators for Stable Operation, F. J. Bobby, 1941, pages 11-14.

Liquid Receivers, Oil Separators, Suction Separators, Purgers, by Robert C. Doremus, 1944, pages 27-37.

Oil Separation and Removal in Refrigeration Plants, by A. L. Blatti, 1944, pages 37-41.

I would answer the above by stating that there is no choice between the horizontal or vertical suction trap from the standpoint of efficiency alone, because either can be made to accomplish all the objectives of a good trap. The choice must be made on other points of design, such as, head room available, velocity of gas in lines leading to trap, head required to return liquid to coils, etc.—H. G. Venemann.

Comparative Heat Transfer Rates

Question No. 803: What is the difference in heat transfer rates, gravity air circulation to Freon 12, between copper tubing and steel pipe of approximately the same O.D. size? —C.R.M.

ANSWER: There is practically no difference in the heat transfer rates from gravity air at some temperature, t_1, to boiling Freon 12 and some temperature, t_2, between copper tubing and steel pipe of the same outside diameter, unless the copper tubing were highly polished. If the copper tubing were highly polished its heat transfer rate will be about 20 per cent less than if its external surface were normally oxidized. Furthermore the heat transfer rate would not be influenced greatly by the thickness of the metal nor by the refrigerant used.

The thing which limits the heat flow is the air film immediately surrounding the pipe or tube. Once the heat in the air passes through this air film it moves very rapidly through the metal. At the inner surface of the metal the heat strikes the refrigerant film which slows it down a little but not very much. Once it passes through this inside film it mixes rapidly with the refrigerant causing it to boil and evaporate. The air film on the outside surface of the pipe sets up a resistance to heat flow about 8100 times as great as that of the metal, and about 78 times as great as that of the refrigerant film. Thus the air film becomes the "bottle neck" of the traffic, and reminds me of a ferry boat in auto traffic.

The overall coefficient of heat transfer based upon outside pipe surface, U_o, for any two fluids, one on the outside of a pipe or tube and the other on the inside, may be calculated from the following equation, if the pipe dimensions and the coefficients f_o, f_i and k are known.

$$U_o = \frac{1}{\frac{D_o}{D_i f_i} + \frac{D_o \log_e D_o/D_i}{2k} + \frac{1}{f_o}} \qquad \text{(Equation 1)}$$

For a standard weight 1¼ inch pipe:

$D_o = 1.66$ in. Outside diameter

$D_i = 1.38$ in. Inside diameter

$\log_e D_o/D_i = 0.1823$

$k = 2640$ for copper and 516 for iron. With a 20 degree temperature difference f_i for Freon 12 will be about 200, and f_o for air will be about 2.14.

Substituting these values in equation 1 we find the overall heat transfer coefficient for a copper pipe.

$$U_o = \frac{1}{\frac{1.66}{1.38 \times 200} + \frac{1.66 \times 0.1823}{2 \times 2640} + \frac{1}{2.14}}$$

$$= \frac{1}{0.006 + 0.0000573 + .467} = \frac{1}{0.4730573} = 2.11$$

Thus it is demonstrated that the overall heat transfer coefficient is controlled almost entirely by the "air film" coefficient.

When solving for the overall heat transfer coefficient for iron pipe we use the conductivity value of iron, 516, in lieu of 2640 in equation 1. This has practically no effect on the overall value of U_o.

The value for the air film coefficient was taken from curves plotted by Charles H. Herter for the N.A.P.R.E. loose leaf data book. The value for the Freon 12 film is one used by several engineers for rough computations. It may range from 100 to 600 depending principally upon weight rate of flow.

Note: The total heat transferred per hour for each square foot of outside pipe surface will be, $Q = AU_o (t_1-t_2) = 1 \times 2.11 \times 20 = 42.2$ Btu. This will be the same for iron and steel pipe or copper tubing.—H.G.V.

Effect of Forced Air

Question No. 804: In thinking the matter through it seems to me that any difference in heat transfer rates between copper tube and steel pipe would be magnified in a refrigerating coil operating in a forced air stream. What is the difference in heat transfer rates between copper tube and steel pipe of the same O.D. in a forced air stream?—C.R.M.

ANSWER: The heat transfer rates from high velocity air to Freon 12 through copper tubing or steel pipe of the same outside diameter may be computed by equation 1 used in the answer to Question No. 803. The air film coefficient will depend upon the air velocity, and the size of the pipe. The following table will give the air film coefficients for 1¼ inch pipe at the several velocities shown.

f.p.m.	300	600	900	1200
f_o	3.60	5.30	6.75	8.10

These values were also taken from the Herter curves for forced convection.

The overall coefficients for forced air shown in Refrigeration Theory and Applications, page 258 and for gravity air on page 251 are safe for design purposes by using a Service Factor to take care of frost, and will be applicable to either copper or steel, and for ammonia or Freon 12.—H.G.V.

New Questions

Liquefying Carbon Dioxide

Question No. 805: Carbon dioxide gas is available from one source at 352 lbs. gage and from another source at 511 lbs. gage pressure. What is the best method of liquefying this gas and what would be the yield in pounds of liquid carbon dioxide per 1000 cu. ft. of gas from each source? How much refrigeration capacity would be required to liquefy 1000 cu. ft. of gas per hour from each source?—R.F.B.

Valve Stems Horizontal

Question No. 806: It has always been my custom to place stop valves with the stem in vertical position on liquid lines to keep the liquid off the packing. Now I have been told that it is much better always to install all stop valves with the stems horizontal in liquid refrigerant lines. Is this latter method better? Why?—E.L.W.

Compressor Capacity and Horsepower

Question No. 807: What is the difference in horsepower and capacity between an ammonia compressor operating at 20 lb. suction and 165 lb. discharge and operation at 50 lb. suction and 195 lb. discharge? In both cases the compressor raises the pressure 145 lbs. per sq. in., but the tabies show the horsepower per ton is quite different.

Will you please explain how much the horsepower per ton refrigeration is decreased when a machine is operated at the higher pressure levels. I know it is generally said that when the suction pressure is raised the hp. per ton drops but the capacity of a machine is increased. Does one cancel the other so that the same motor can drive a compressor at either pressure?—P.E.J.

Member Activities

Memphis

By CHAS. CONLEY

THE first meeting of the month was devoted to the ice industry, including production and marketing of ice. The principal speaker was W. W. Simmons, Jr., of the Broadway Coal & Ice Co. There was a large attendance to hear Mr. Simmons describe, in his most likable and forceful way, the manufacture of ice and the methods of plant operation which contribute to economical production. He outlined the cycle of the refrigerating system in the ice plant and told how the different portions of the system should be operated for best results. He paid a fine tribute to NAPRE and its chapters for their productive efforts to assist members. This is most important, he said, to the individual members and their industries because every man should be properly prepared to carry on his work in the best possible manner.

Mr. Simmons then turned the meeting into an open discussion which brought out a number of questions on the ice manufacturing, processing, and methods. There was some discussion on the older types of distilled water plants. He predicted that the future would bring on continuing new developments because the ice business will continue to grow and enjoy larger volume of sales.

The program was concluded with the presentation of a very interesting talking motion picture, "Ice is Big Business." Then the group enjoyed sandwiches and drinks and a social hour after which the meeting was adjourned.

The subject of the second meeting of the month was "Methods of Checking Sick Plants," which was presented by Cliff Demere, chief supervising engineer for E. L. Bruce & Co., large manufacturers of forest products including a large amount of hardwood flooring. He described power plant equipment including steam boilers, prime movers and auxiliaries, and explained the value of utilizing exhaust steam in other plant processes. Mr. Demere declared that many engineers have lost a fine engine room to central station power by not arranging to use the exhaust steam from engines and pumps.

A number of ways to check plants for illnesses that may develop were described along with methods for correcting these situations and obtaining the best efficiency from a plant. Mr. Demere is a steam engineer of broad experience who has charge of several large plants his company operates in various sections of the country.

Sacramento

By D. W. BARTON

The officers elected to serve the chapter are:
President, Roy Murray.
Vice-president, Ray Lanigir.
Secretary-treasurer, D. W. Barton.
Sergeant-at-arms, C. U. Klein.
Chairman educational committee, Quaid Minich.

Following election of officers, a social meeting was held and sandwiches and refreshments were served.

Portland

By PAUL PAIST

The regular meeting of Portland Chapter was held in the Central Y.M.C.A. The special speaker of the evening was C. W. Quentel of the C. W. Moore Engineering Co. Mr. Quentel first showed a technicolor movie, "Steam for Power." This movie traced the general history of steam boilers and by use of cut-away diagrams, the history of the Babcock and Wilcox boilers in particular. Especially interesting were the operating views of the latest in steam generation, showing the cyclone steam separators, cyclone burners, multi-purpose burners and slag walls. After the film Mr. Quentel answered the questions of the members and also described some of the local installations of his firm.

N.A.P.R.E. Department

Marion

By Clyde Carter

When Marion Chapter set up its new program recently we arranged to purchase new meeting room equipment including a number of chairs; the estimates of the attendants at the meetings, however, were not sufficiently large. Excellent interest has been shown and the number in attendance has gone beyond the provisions which were made for the group. We expect this to continue and an additional supply of chairs has been ordered.

We welcome to membership: Thos. Taylor, Jr., Cairo; Alvin McGhee and Glee Hammon, Jonesboro; John Purcell, Jr., Joe Purcell, and Wayne Reiman, Murphysboro; Robert Wade,, Miles Hopper, Floyd Walker and Wayne Goins, Herrin.

A regular class on Refrigeration is being conducted. The studies are based on the NAPRE lecture course.

In January, James Stubblefield, Public Ice Service, Cairo, and a member of the chapter, gave a talk at the convention of the Illinois Association of Ice Industries. His subject was "Plant Maintenance" and he gave many useful suggestions for engineers in this branch of the work.

Chicago

By E. B. Jones

In the refrigerating class, instructor Eugene Rytlewski has continued to present information on Freon mains and proper methods of connecting the various parts of Freon systems. He also gave a report on the recent conference of the Chicago Boiler Inspection Department on boilers and pressure vessels. He reported that much of the conference was devoted to boiler subjects but unfired pressure vessels had some attention. It was announced that in the future all pressure vessels larger than 6 in. diameter would have to carry the ASME certification if they are installed in Chicago. While enforcement of ordinances has not been too rigid in the past, it is expected that the permit and inspection procedure will be rigidly enforced in the future. Those installing equipment should be familiar with it and should observe all the provisions.

The special speaker of the evening was Carl Grover of the Bussmann Manufacturing Co., who gave a slide illustrated lecture on Fusetrons. He showed how these thermal time-lag fuses protect electrical equipment against damage. In most cases where ordinary fuses are used they must be installed considerably oversize in order to hold without burning out because of high starting current. These larger fuses, however, do not give running protection to the motor. In case of single phasing or overload the motor can heat up and burn out before the large fuse will blow.

The Fusetron, however, is applied in motor protection size and because of its characteristics will carry the high starting current. Yet if the running current increases to threatening proportions the fuse will blow before any damage is done. Correlating advantages are that much smaller fuses and their accessories can be used. This saves space and initial cost of installation. In addition the time-lag fuses protect against damage caused by loose or faulty connections which produce destructive heating.

A discussion on air handling systems was presented at the second meeting by H. H. Van Epps of Tuttle & Bailey Co. Mr. Van Epps said that much trouble has been encountered when air distribution systems designed for heating have been used for comfort cooling and when comfort cooling systems have been used for the distribution of air in heating. Air outlets in the ceiling, he pointed out, have proved very satisfactory in comfort cooling systems but frequently bring complaint when they are utilized to distribute warm air. From a ceiling outlet the air may impinge on a cold wall or window and magnify the discomfort of cold down drafts passing back from the window along the floor. The remedy, he said, is to supply additional heat along the cold walls.

It was suggested that air conditioning systems always be set up with the type of application in mind because demands vary. For instance an air movement of 50 ft. per minute is satisfactory for men but women prefer lower air velocity, around 30 ft. per minute. The proper application of wall-type diffusers was explained and Mr. Van Epps sketched diagrams to show the angle at which multiple wall diffusers should be set to produce the proper air pattern. He cautioned that while discharge velocities would be satisfactory in a range from 500 to 1500 ft. per minute, exhaust grilles should be sized for a velocity of only 400 to 600 ft. per minute.

Pittsburgh

By Louis P. Mantz

The annual report of the chapter was presented by the secretary. The records showed that all the chapter meetings during the past year were well attended and good interest was shown in the educational work. Nine new members were admitted and two former members were reinstated to membership. The treasurer's report showed a good balance.

Chairman Samuel Parks of the Educational Committee was busy with his work at the school. It was suggested that two assistants be appointed to work with him on the educational program. By vote of the membership, David Jenkins and George Kessel were appointed to the committee and they promised to confer with Mr. Parks in order to assist in arranging and presenting the educational program. A social hour was enjoyed by the meeting attendants and refreshments were served.

The members of the chapter were sorry to hear that Mrs. James B. Moore had died suddenly and sympathy was expressed to their fellow member.

Colton

By H. O. Bonter

The regular meeting of the chapter was held at the Santa Fe ice plant in San Bernardino. The refrigeration class was conducted by instructor E. H. Carlson who has arranged to present a regular course of instruction at the meetings.

A lecture and demonstration on metallizing featured this meeting. The speakers were Paul Joy, Field Engineer and Geo. Brach, Service Engineer, of the Metallizing Engineering Co., Inc., Los Angeles. They gave blackboard illustrations and talked on the various ways of using metallizing. The method employed to prepare parts for metallizing was explained along with the materials and the kind of metal to spray on. After the talk the group retired to the machine shop at the plant for a demonstration of preparing the metal and spraying of parts with different kinds of metals.

The night was very cold so the group enjoyed their return to the warm lunch room where discussions on metallizing were continued, and coffee, doughnuts and pie were served. This was a very interesting and educational meeting.

Seattle

By J. D. Henion

The new president, Clarence Giel, was installed along with other officers, and announced he is appointing only the chairmen for the various committees and allowing each to pick his committee members. The new chairmen of the committees are as follows: Educational, Robert Rittenberg; Membership, Arthur Webb; Finance, Jack Atkins; Entertainment, Dave Pobst.

The remainder of the evening was devoted to a talk on "Practical Analysis of Reverse Cycle Heat for Homes" by James Meiklejohn, Marvair Northwest Heat Pump Sales Co. Mr. Meikeljohn briefly reviewed the history of the heat pump beginning with first paper on the subject by Lord Kelvyn in 1852, and described some of the thirty chemical and industrial applications by Brown Boveri Corp. Then he called attention to various well-known commercial and domestic heat pump installations in the United States.

The pros and cons of the several sources of heat were analyzed along with the future of the heat pump. Statistics relative to the coefficient of performance for installations in various parts of the world were discussed and Mr. Meiklejohn described ten installations made by his company in this vicinity. Numerous photographs of these installations were passed around for inspection and then pamphlets describing the Marvair heat pump were distributed.

Stockton-Modesto

By R. M. Edger

At our regular meeting we had a speaker, W. B. Ludwig of the York Corp., San Francisco, who gave a lecture on the York Turbo-Compressor. Mr. Ludwig is sales engineer for this company. He is very well posted on his subject and gave a very interesting lecture on this machine. He detailed the special advantages the turbo compressor has in many applications, especially those of large tonnage and described a number of installations of the machine. The interest his talk created was demonstrated by the fact that the question and discussion period went on for a period of time as long as the lecture had required. We feel that everyone obtained a great deal of information from this talk.

San Francisco

By Hunter McLaughlin

The preliminary class was conducted by Mr. Stan Petersen and consisted of a discussion of the various types of drives suitable for refrigeration compressors, and also of capacity control such as variable speed motors, clearance pockets, and various forms of by-pass systems.

President, Andy Hope, announced his committees for the coming year as follows:

Advisory, W. S. Orton, C. W. Hulse, B. C. McKenna.

Directors. H. C. Diehl, C. C. Fitch, J. A. Hawkins.

Class, S. E. Petersen, Chrm., J. F. Dustin, J. R. Kelehan. H. T. John.

Education, W. W. Sandholt, Chrm., J. Herzog, S. Gran, E. J. Flaherty, R. F. McKee.

Membership, H. B. Morgan, Chrm., D. DeFremery, J. E. Rauch, J. Y. Fraser, J. P. Klass.

The chairmen of the other standing committees are: Attendance, G. J. Salomone, L. E. Steinert; Finance, W. H. Edis; Examining, G. Sorber; Public Relations, J. P. Scattini; Entertainment, B. C. McKenna; Library, C. A. Gillet; Reception, W. F. Harrison.

The entertainment for the evening was provided by Roy Vorlich of U. S. Electrical Motors, Inc., and consisted of a very interesting moving picture. This film explained the operation and construction features of the U. S. Vari-drive. Scenes showing the manufacturing and testing of this product were shown as were actual installations in the plants of various industries. This program was very well presented and was greatly appreciated.

Los Angeles

By Fred Herr

Past-president Donald M. Byl, who wielded the gavel over Los Angeles Chapter of the NAPRE so splendidly in 1948, was the recipient of dual honors at the February 2 meeting, held in the Terminal Club.

At the start of the meeting Mr. Byl was called to the front of the meeting room and presented with a beautiful watch in token of the members' appreciation of his fine work last year. President Rudi Kettler remarked ruefully that Byl's 1948 record of achievement was so outstanding that he made it difficult for the man who followed him in the presidency. Notable, for instance, among the chapter's accomplishments during Mr. Byl's tenure of office, was the winning of the second successive national membership pennant under the Committee Chairmanship of Frank R. Elliot of the Union Ice Co.

Later in the meeting Mr. Byl gave evidence that his return to the rank and file had not dimmed his enthusiasm for chapter work. He was called to the front for the second time that evening and presented with an autographed copy of the Principles of Refrigeration—the prize awarded to the member who brings in five new members.

From a report given by W. R. Burnett, who is serving as membership committee chairman for the second time in three years (he led the successful 1947 pennant drive), it

(Continued on page 71)

Classes in Membership

THE 1949 membership contest will have an interesting angle as announced by Chairman William Finnegan of the national membership committee. Since the 1949 convention will be held at Purdue University, the idea of having the chapters work up through various classes seems appropriate. When the chapters begin their drives they will be entered as Freshmen in the contest. Then by their work, they will be promoted on the following basis:

Class	Total Points	Percentage
Sophomore	11-20	21-40
Junior	21-30	41-60
Senior	31-40	61-80

Chairman Finnegan has not suggested that members of these chapters which do not earn their way beyond the freshman class will wear the little green caps when they attend the convention. It is an idea though and early work in the contest is indicated for those who wish to be promoted to the higher classes.

Scoring of the contest will be on the same basis as in the past. Points will be given for new members secured and a bonus will be added, equivalent to the percentage of renewals received. Thus it benefits the chapter to retain present members and work to bring in new ones. New members secured throughout the year, up to the end of the contest will count in the standings and for the prizes.

Prizes will be awarded in two divisions; a first and second prize will be given to the chapter obtaining the largest total points. To give equal chance to smaller chapters, a first and second prize will be given the chapter having the highest point percentage. First prize in each case is a $25 U. S. savings bond while the second prize will be $10 in U. S. savings stamps.

All the new members obtained from October 15, 1948 until the end of the contest will be counted. The contest will end on October 15, 1949. All reports post-marked up through October 15 of this year will be counted.

A number of chapters have already started their work. Next month the list will be published to show the classes in which their early work has placed them. Reports from Los Angeles indicate that this group which has made a habit of winning recently, expects to continue. Others who wish to dispute this will probably be showing up during the next few months. At any rate, it is a good time to get to work and pile up points for the future.

A Visitor from Israel

NATIONAL Headquarters enjoyed the visit of David Feldman, member-at-large, from Haifa, Israel. Mr. Feldman is chief engineer of the Palestine Cold Storage Co., which operates several refrigerated warehouses and conducts an extensive importing business in produce. He is in the United States to inspect refrigeration installations of various types and become familiar with current refrigerating practice in this country, as well as purchase equipment for use in their plants.

He attended the meeting of Chicago chapter and complimented the group on the excellent educational program presented by Instructor Eugene Rytlewski and the special speaker.

ENGINE ROOM POINTERS –

How Refrigerating Plant Officials Can Reproduce Blue Prints

IN CONNECTION with advertising I find that many refrigerating experts are not informed regarding the least costly way in which to reproduce blue prints for making engravings. The usual method is to do the entire drawing over, in black ink on white paper, which is usually expensive for some of the work—so expensive, in fact, that it too often isn't done at all.

I have reproduced many blue-prints, frequently without doing a single line of inking. My method is to send the blue-print to a photostat concern and specify the size I want. The minimum size of photostat is 8½ x 11 in. and costs only 50 cents. The photostat copy which they return to me together with my original blue-print is a so-called "positive". That is, the lines are black and the background is white. A first class photostat job will give good sharp black lines which can be reproduced without difficulty.

How to Make Certain that Shafting Is Perfectly Level and Straight

FIG. 1 shows an excellent way in which to align shafting longitudinally. Simply suspend plumb bobs around the side of the shaft, as indicated, all being suspended from the same side. If there are at least three such plumb bobs, it is a simple matter to glance along them and see whether or not the shaft is in alignment. If the plumb bobs are rather far apart you can stretch a thread close to the vertical threads leading to the plumb bobs and you can then measure the misalignment, if you wish, with almost perfect accuracy. The plumb bobs suspended in this way are all perfect tangents to the shaft, and, knowing the diameter of the shaft, there can be no question as to where the center of the shaft is all along the line.

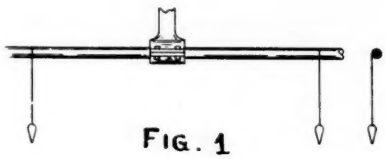

FIG. 1

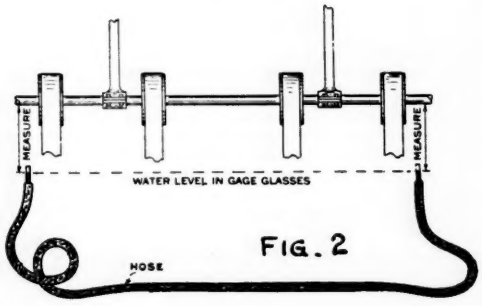

FIG. 2

As for aligning shafting vertically, to make sure that it is level, one may use an ordinary garden or other hose filled with water, with gage glasses inserted in the ends, as indicated in Fig. 2. No matter how far the ends of this hose are apart, the water will always assume a perfect level and you can be certain as to whether or not the shafting is absolutely level. The only thing to watch out for is: be sure that there is no air in the hose—that it is full of water —and be sure that the temperature of the water is the same from end to end. If one end of the hose is hot and the other end is cold it will not be accurate.

What is Meant by "Most Elastic"?

WE commonly hear the expression "most elastic", but it was only recently that this writer was asked to explain its meaning. Thus for example it is sometimes applied to power transmission belting, in which instance it means that the most elastic belting material will return to its original length and shape more perfectly than will any other belting material. It does not mean that the material will elongate more than other belting materials.

Glass, for example, is one of the most elastic materials in existence, yet most people regard glass as being inelastic. A pane of glass has been loaded down at its center with a weight, in a sprung position, and has been kept in that position for several years. Upon removal of the weight the glass resumed its original shape in spite of the long period of time it had been distorted. That is the best test for elasticity.

Similarly, cork is a highly elastic wood, and that is the reason why it is used for corking bottles. When other woods are used as bottle stoppers they come out easily after the passing of time because they don't remain tight. Highly elastic cork maintains its pressure against the sides of the bottle neck, hence doesn't loosen, and doesn't leak. India rubber is "more elastic" than synthetic rubber, so this writer has found, particularly when made into elastic rubber bands. The permanent stretch in synthetic bands is much more pronounced than in India rubber.

Why Use Heat Insulation?

HEAT insulation should be used for several reasons, the most important being that good insulation reduces heat loss from 60% to 80% and sometimes more than that.

A commonly recommended heat insulation is known as "85% magnesia"—which is an adopted standard insulation and is primarily a mixture of 15 per cent asbestos and 85 per cent magnesia. For instance on high pressure steam pipes, 2 in. and smaller, a thickness of 3 in. should be used; between 2 in. and 8 in. use a 2½ in. thickness and on larger pipes use 3 in. Thinner insulation may be employed on lower temperature lines.

There are many manufactured forms of insulation. Some come in rolls, some in sheets, corrugated, loose plaster forms, and for hot underground pipes sectional laminated asbestos is generally used on single pipes and a filler type where there are several pipes. When heat is valuable almost any kind of insulation is better than no insulation at all.

The Ice Industry

National Association of Ice Industries

Executive Offices
1706 L St. N. W., Washington 6, D. C.

PRESIDENT
M. J. Garvey, St. Joseph, Mo.

EXECUTIVE SECRETARY
Mount Taylor, Washington, D. C.

Industry Warned New Wage Hour Law Would Increase Costs

A BULLETIN has been issued by Mount Taylor, executive secretary of the National Association of Ice Industries, calling attention to the proposed new Wage Hour Law now pending before Congress which, if passed, would increase the labor cost of producing and selling ice. This estimate runs as high as 50 cents to $1.50 per ton, depending on existing wage rates in each locality. The bill includes the following provisions:

1—Raises the minimum hourly wage of all employees 75 cents immediately and to $1.00 per hour as soon as the Secretary of Labor can go through the formalities of "committee hearings" with time and a half for all overtime in excess of 40 hours per week. For example, if the present minimum wage rate of the lowest paid employee is 60 cents an hour, his rate would be increased first to 75 cents and then to $1.00 per hour and it would become necessary almost immediately to increase the rates of nearly all other employees proportionately. And, in addition, all employees would have to be paid time and one half their regular rates on all hours worked in excess of 40 hours per week.

2—This pending bill would extend the coverage to include all employees, with the possible exception of outside salesmen, branch managers, of every business or industry in or affecting commerce, or in competition with any other business in commerce. This would include all employees, office workers, delivery men, salesmen, station and platform attendants of every ice company and every ice business in the United States. The basic increase in wage rates with time and a half for overtime, would be applicable to the entire payroll with the possible exception of those few which the Secretary of Labor might designate as being engaged in administrative or executive work or as outside salesmen.

3—The Secretary of Labor would be given almost dictatorial authority in defining the meaning and application of many ambiguous terms and provisions of the law which determination would, in effect, become law.

What Can Be Done About It?

This proposed law, the bulletin states, can be averted or modified if all company owners and managers in sufficient numbers and strength want it to be, and will go to work on it. The strategy of the proponents of the Bill is to railroad it through Congress before business and industry realizes what is being done or have time to register their positions and views. Plans are being made to put the Bill through the House during February and through the Senate shortly thereafter.

A substantial number of members of Congress and of the House and Senate committees, before whom it is pending, are opposed to many provisions of it and to the "steam roller" tactics now being employed to jam it through but they are in the minority; they need and must have the help of their constituents in opposing it. If business does not respond it will be evident that they are not concerned about the Bill and such evidence will be exploited to the limit by its proponents.

In the opinion of most well informed observers of the present situation, it is doubtful if passage of a new Wage-Hour Law of some kind, increasing the present 40 cents minimum to some extent, can be prevented in this session of Congress. It is the opinion of many, however, that it will be possible, through amendments to the pending Bill, to eliminate some of the most objectionable provisions in it. These observers suggest that the most effective policy for members of the ice industry to pursue would be about as follows:

First, and of primary importance, protest against the tactics now being employed by the proponents of this Bill in trying to railroad it through Congress before industry, the general public, and even some members of Congress itself have time to learn what it is all about. A new law of such complexity and far reaching effect on the economic welfare of the country should be acted upon with extreme deliberation and care. A minimum of three months should be allowed for those affected by it to study the meaning and effect of its many provisions and convey their opinions and views to their representatives in Congress.

Second, protest against that provision of the Bill which extends coverage of the law to employees of all businesses affecting commerce or in competition with any business in commerce. This is a provision which would most seriously affect ice companies because it would extend coverage to all employees of thousands of companies who do not produce ice for commerce, and to tens of thousands of ice delivery men, ice station and platform attendants, and others who are not covered at all or who are exempt as retail salesmen under the present Wage-Hour Law.

How To Register Protest

First, the bulletin states, call your representatives and senators by telephone and tell them what this proposed legislation appears to mean to you and your business community, and urge that more time be allowed for careful study and mature consideration of the scope and effect of the provisions of the Bill. Tell them what changes, based upon your first reaction to the provisions of the Bill, you want made in it and why you want them. If not feasible to contact them on the telephone, wire them in full detail stating your views and demands in your own words and

your own style. Find out what your representatives' and senators' positions are on the issue involved and, if possible, how they are going to vote on them and use this information when contacting them.

Second, a more effective method of making your views impressive is to get on the train and go to Washington and talk to your congressmen and senators face to face. They will sincerely appreciate and respect such manifestations of personal interest and they will listen to and be guided by what you tell them. If enough men in the ice business do this, they will come pretty close to getting what they want in this particular case of legislation.

Later Bulletin

A later bulletin issued by Wm. T. Jobe, general counsel for the Association states that representatives of the ice industry appeared before the House Committee to offer testimony in opposition to the proposed legislation, after the hearings had been continued beyond the time they were scheduled to close. The next objective will be to block passage or amend the Bill in the House Committee and then follow through on the floor of the House and the Senate.

National Ice Marketing Institute Graduates Fourth Class

DIPLOMAS and congratulations were presented to the members of the fourth class of the National Ice Marketing Institute by Mount Taylor, executive secretary of the National Association of Ice Industries. Mr. Taylor said to them: "The future of the ice industry depends upon young men like you in junior executive positions." The centerpiece shown on the table illustrated below was carved from ice by Fred Waible, superintendent Ice Service, Inc., Evansville, Ind.

Seated: Burl Smith (secretary), Southland Corp., Austin, Tex.; Philip Lowenthal (president), Ice Service, Inc., Evansville, Ind.; J. C. Ruppert, National Ice Marketing Institute; James Crouch, Jr. (vice president and toastmaster), Crossfield Ice Co., Griffin, Ga.; Mount Taylor, National Association Ice Industries; R. C. Thompson (treasurer), Irvington Ice & Coal, Indianapolis, Ind.; Daniel A. Prager, National Association Ice Industries.

Standing: B. C. Gill, Southwest Ice & Dairy Products, Oklahoma City, Okla.; Fred Waible, Ice Service, Inc., Evansville, Ind.; William Kincaid, Ice Service, Inc., Evansville, Ind.; Lester Godwin, Arkansas Ice & Storage, Blytheville, Ark.; Coy Argo, Southland Corp., Waco, Tex.; M. E. Lawrence, Consumers Ice & Fuel, El Paso, Tex.; Jesse Kimball, Southwest Ice Service, Coffeyville, Kans.

Winter Carnival Needs Ice

TWO TONS of ice for the throne of the Petoskey (Mich.) winter queen has been offered by W. C. Naylor, Boyne City ice manufacturer. There hasn't been enough cold weather this winter to freeze over Little Traverse Bay, the usual source of ice for the winter queen's throne.

Ice Plays Big Role at Health Show

THE service rendered by ice for preserving public health by its protection of perishable foods was demonstrated in Boston, November 8-12, at the 76th annual meeting of the American Public Health Convention. Public Health officials and health educators alike commented favorably on the striking exhibit of iced fruits and vegetables sponsored by the National Association of Ice Industries. Much praise was given ice industry efforts in the field of health and its research toward improved marketing methods. Several delegates mentioned that near-relatives had earned degrees in "ice research" in colleges where studies on the benefits of iceman's ice are being conducted.

Added attraction for more than 4,000 public health delegates was the ice punch bowl, provided fresh daily by the Boston Ice Company, and piled high with luscious California grapes. As usual, the 64-dollar question was, "Is it real?" . . . which, in many instances, was followed by ". . . but what keeps it from melting?" Many return visitors to the booth recognized the crystal-clear bowl as being ice because of the daily change of flowers frozen inside, roses one day, carnations the next. Needless to say, it was necessary to replenish the grapes constantly!

The equipment, including a 6 ft. ice display case, a beverage chest, a poultry and fish case, an auxiliary chest and two ice refrigerators were provided by the Metropolitan Ice Co. and in addition Elliott Hadley of the Metropolitan sales staff was on duty at the booth. For their part, Boston Ice Company kept equipment well stocked with ice daily and this included keeping and bringing the ice punch bowl in every morning. Charles Perkins, super sales representative of Boston Ice, also was on hand.

Grocers Hear About Vegetable Icing

APPROXIMATELY 150 grocers and employees of Shelbyville, Ind., met recently for a chicken dinner and a demonstration on vegetable icing. The dinner meeting, held at the Strand Alcazar was put on by the De Prez Ice Manufacturing Co. The National Association movie, "Naturally Yours," was shown, and a demonstration was made by D. L. Trusty of La Porte, Ind., on proper methods of ice protection for a display of perishable produce.

Manual on Iced Produce Demonstration

ICE distributors planning an iced vegetable meeting for the grocers of their community will find a copy of "Here's How to Stage a Successful Iced Produce Merchandising Demonstration" quite helpful. This manual prepared recently by the Public Relations Department of the National Association of Ice Industries for distribution to companies that request it, lists the details of the enire procedure from sending out invitations on through to the final adjournment.

Ice Demonstrated to Dealers

METHODS of keeping fruit and vegetable displays at peak freshness through use of refrigeration were demonstrated to approximately 250 retail dealers at Houston, Tex., in the Schuhmacher Co. warehouse at Hicks and Sellers. Andy Andrich, field service representative of the National Association of Ice Industries, arranged fruits and vegetables in display racks to illustrate the advantages of ice in keeping foods fresh and attractive. The retailers were welcomed by Robert Perlitz, vice-president and general manager of the Schuhmacher Co. Cooling and freezing facilities at the warehouse were shown following the meeting.

Selling Ice to Dairies the Modern Way? Milk Case Icer is the Answer

By Charles E. Dearing
Metropolitan Ice Co., Somerville, Mass.

IN THE early summer of 1947, the Deerfoot Farms of Newton, Mass., a subsidiary of the General Ice Cream Corp. which is a division of the National Dairy Corp. approached us regarding a new method of icing milk cases. This milk company had just completed the erection of a new, modern, three-quarter million dollar plant. The interior of this plant has white tile walls and red tile floors. Deerfoot Farms didn't want to go into the ice business. They didn't want to bother with slingers, crushers, blowers, sized ice, or shovels. They didn't want any harm done to their beautiful new building.

So this problem fell into our laps. It was necessary to obtain some sort of a bag that would fit snugly inside the milk case. We tried out and tested many types of bags and finally found that the best and most efficient, in our opinion, was a cotton mesh bag 15 by 20 inches into which we put 20 pounds of crushed ice. This type of bag leaves no lint on the milk bottles. When filled it has a 7 inch depth of ice.

Making the Bag

For the drawstrings of these bags we used Cod fishline or 27-thread ganging twine. These drawstrings must be strong enough to withstand washing of the milk case. For a closing device for the bags we used washers made from sheets of 2-ply ⅛ in. rubber. An ordinary sail needle or an upholstery needle is used with about four ft. of twine to interlace the top of the bag. The rubber washer is cut about 1 ¼ in. in diameter with two holes in the center for the drawstrings to pass through. After the washer has been slipped on to the drawstrings a knot is tied at the very end of the drawstring and a second knot about two inches farther down. This acts as a handle for closing the bag after it has been filled with crushed ice.

These cotton mesh bags cost approximately 40 cents apiece, the rubber washer 1 ½ cents and the drawstring 2 cents. The labor for assembling the bag amounts to about 2 cents. This totals 45 ½ cents per bag. We do not know the exact life of the bag as many of the original ones are still in use after a season and a half. They have made at least 80 trips and they are still in fairly good condition. It would be conservative to estimate, I think, that they are good for at least 100 trips.

To further break down the cost, we find it less than ½ cent per trip. The laundering costs in the neighborhood of 1/5 of a cent per trip. With the cost of the bag, the labor of assembling, and the laundering, we find the cost per trip per bag should be about 2/3 cents.

When ordering bags, it is necessary to order three times as many as are needed per day because on a short haul it is two or three days before the empty bags are returned. On the longer hauls, five times the daily delivery should be provided.

All icemen know that the easiest, quickest and most economical way to move ice is in the 300-pound block form. Processed ice is more expensive and this is a problem that must be met by the ice company. We found that a skid 30 inches wide by 48 inches long will hold ten tiers of eight bags, with the two top rows pyramided, totaling 75 bags to a skid. This skid is moved from the filling bins in the plant to delivery trucks at the platform by a hydraulic jack and unloaded at the milk plant with their own jack or fork truck and placed beside their route truck ready for the milk routeman to handle as he places his milk cases in his truck.

When the milk routemen return at the end of the day, the empty and full cases of milk and milk case icers are checked in, the empty ice bags are placed in barrels which have been perforated to allow drainage, to await their return to the ice plant the following morning.

Filling the Bags

To fill these bags is not a difficult problem. All one has to do is to install an U-shaped lip to be fastened at the rear of the filling spout on the sized ice storage bin, letting the back of the bag hook onto the lip. Fill the bag with 20 pounds of ice. To check the weight, weigh a bag occasionally with scales which may be placed at a strategic position near the filling bin. Grab the drawstring by the handle previously described, the weight of the filled bag will automatically close it; then snap the washer down tightly to the bag and lay it on the skid.

After some experience, two efficient men can pack 75 bags in ten minutes. Including the filling and handling, as well as the emptying of the ice from the returned bag, we have found our labor cost to be about 3 cents. In our market, we are able to get 10 cents a bag delivered, or 9 cents if picked up at our platform. In other words, we are getting nine to ten dollars a ton. Each morning when the bags are returned from the milk companies, it is necessary to empty any remaining ice and sort out the bags.

The bags should be laundered at the start of the season, which in our section of the country runs about six months, from May to November. Also, it is necessary that all bags be laundered and thoroughly dried at the close of the ice season before being placed in dry storage.

The delivery of these milk case icers is proving not to be as expensive as originally thought. The skid containing the 75 bags will ice at least 225 cases of milk while a 300-pound block will ice only 24 cases. It can easily be seen that it is less work to handle one skid with a jack than nine 300-pound blocks of ice.

The milk drivers like this system because it saves them the labor of shoveling ice on each case of milk. This cuts their loading time in half and allows them that much more time on their routes with increased profit to them. The flexibility of this method allows the drivers to hold the milk at a surprisingly low temperature on what is returned to the processing plant.

All the ice left in the milk case icers can be concentrated so that it is properly and adequately refrigerated. With the old method of icing each case, the ice was dissipated and on the return trip no ice was available for the unsold milk because it sifts to the bottom of the milk cases and for the most part has melted.

From talk presented at annual convention of National Association of Ice Industries.

Selling Points

This new type of icing eliminates the need for maintaining a crew of men in the milk plant to handle the ice. No icing equipment or machinery is necessary, which cuts down their equipment costs and saves valuable refrigerator space for other purposes. It eliminates carrying supplementary block ice which is usually placed in the rear of the delivery truck causing a greater wear and rust in that section of the body. The block ice also takes up space that could be used to carry additional milk cases.

The milk case icer distributes the meltage evenly throughout the truck. For square bottles there is a definite advantage for they can't slide through the crushed ice and break. The ice remains at the top of the case and is not in the way when bottles are returned. Also, the ice used in this form can only be used to ice milk cases. It is not practical for use in beverage coolers, therefore eliminating any side deals between the milkman and the retailer.

Besides servicing effectively the domestic milk routes, we find the milk case icers are invaluable on the wholesale routes and transports. With the old method of blowing three tons of slinger ice into the transport, it was found the snow sifted to the bottom of the trailers less than two miles after leaving the milk plant. The bag ice is placed on top of each stack of milk cases or around the neck of the 40-quart cans of milk. This makes a blanket; it seals the top of the entire load of milk. When making a commercial stop and the retail store hasn't opened for the day's business, the milk routeman merely opens a bag of ice and lets it fall around the cases of milk he leaves stacked outside the store.

Whiting Milk Company, one of the largest in New England, put its laboratory staff to work on testing this new icing method for two weeks. They found the temperature of the milk was as low as 44 and 46 F. when being removed from the transport at point of destination, in some cases 100 miles.

Used for Domestic Deliveries

To further realize the economies of the milk case icer, it was found that the bag ice used to ice transport milk cases could also be used at the destination to ice this same milk when it was transferred to domestic deliveries. Tests showed that only 50 per cent of the ice was used to transport the milk, which left the balance of 50 per cent to be used on the home delivery routes, even in the hottest weather. The ice bag, when placed on the cases of milk, seals the cases. It keeps out all air so that the full benefit of the ice is realized. It is a controlled refrigerant.

Milk companies under this new method are out of the ice business, as they should be. Leaving ice and refrigeration to the ice companies, and milk deliveries to the milk companies, should be most satisfactory to both parties.

We believe the milk case icer is the modern way of icing milk cases and that it is the best way to refrigerate the square bottles or the waxed cartons. The milk companies that we serve have no need nor reason for going into the ice business because this method provides them with a controllable icing method which fits into their business, either domestic or commercial.

Ice Company Owner Injured

J. L. BLACKWELL, owner of an ice company at Vicksburg, Miss., was critically injured in an automobile accident recently. Mr. Blackwell's car collided with another automobile. He received chest injuries according to hospital physicians who pronounce his condition as critical.

Self Service Ice Sales—Customers Buy at All Hours

THE advantages of vending stations in the merchandising of retail ice sales were discussed by F. B. Dickinson at the Illinois ice convention held at Springfield, Ill., January 20 and 21. This method, he said, makes ice easy to buy at all hours, at handy points and is designed to merchandise, sell and deliver at the same time. Some of the reasons why this method of selling ice is advantageous, he pointed out as follows:

Consumer Demand: Vending stations give customers what they want. They are self-service, the ice is handy for purchase at many places, at all hours, and at any time of the year. The customer can get block, cubed or crushed ice, as he desires. He loses interest in substitutes.

Operating Costs: Selling and delivery costs are greatly reduced. Ice is sold for cash. Block, cubed or crushed ice can be sold for far greater profit than bulk ice. Profits are not divided so many times.

Impulse Buying: Every time a prospective customer sees a station he is reminded of ice, and he knows it is right there, handy for him to buy. When he comes to buy a block of ice, he will many times also buy a sack of cubes.

Traffic Count: Vending stations are portable. They can be placed in a comparatively small space at a point that has been tested for sales possibilities. If sales fall off at that point, the station can be moved. Gasoline stations have been found good places for locating vending stations.

Buying Seasons: More ice can be sold during off seasons than is now being sold. Owners of automatic vending stations have proved that, and the stations require no undue efforts nor change in present set-up to offer ice the year round. When sales do fall off, operating expenses are also reduced proportionately.

North Carolina Bill Bars Wet Coolers

SALE and use of "wet coolers" would be restricted by a bill introduced in the North Carolina Legislature by Senators J. C. Pittman of Lee and Paul E. Jones of Pitt. The proposed legislation defines wet coolers as a refrigerator or ice box, "so arranged, constructed and utilized that the containers of beverage being refrigerated are partially or wholly immersed in water.

Under the bill, it would be a misdemeanor for anyone to sell such a cooler for refrigerating beer, carbonated beverages, any soft drink or milk except at a location where electric current is not available or for use at "some public athletic event or other public gathering." When wet coolers are used at these places, the bill would make it necessary for them to be cleaned and the water changed at least once a week in locations which have no electric current, and the water changed daily at public gatherings.

Ice Film Shown by Television

ABOUT 3,000 television set owners and several hundred of their guests saw "Naturally Yours" over WMCT in Memphis, Tenn., on Monday night, Jan. 31. The film was made available by the National Association of Ice Industries and arrangements for televising it were made by members of the ice industry in Memphis.

The success of this televising of the industry's film was proven the next day. Many favorable calls were received by the industry's executives, as set owners congratulated the ice men on their program.

Use of this film on television is an excellent way to get the story of clear, taste-free ice to thousands of homes who have not been fully aware of the advantages of modern ice refrigeration.

Reports From Unit Ice Associations

Illinois Association of Ice Industries, 1949 Meeting

THE 42nd annual convention of the Illinois Association of Ice Industries was held in Springfield, Ill. January 20 and 21 with headquarters in the St. Nicholas Hotel. The sessions were apportioned among the three principal subjects of Management, Merchandising and Engineering with specialists to lead in the discussion and encourage participation by the attendants. A full program of entertainment was arranged for the group and a "get-acquainted" party drew many of the people together on the evening preceding the formal opening.

Illinois Association of Ice Industries

OFFICERS

President, Robert Muckerman, Alton
Vice-President, O. C. Curtis, Pekin
Secy.-Treas., W. D. Wright, Clinton

DIVISION CHAIRMEN

Management, John Glenn, Beardstown
Merchandising, Wallace Wrigley, Peoria
Engineering, James Oldani, Springfield

First Session

The convention was called to order by president John Purcell who welcomed the attendants and analyzed the program to be presented. He urged everyone to take a full part in the discussion to bring out the most valuable ideas for general use.

Secretary Wm. D. Wright reviewed a very productive year and pointed out that this was the first period of operation under the new four-division organization. Special tribute was paid to Don Lock, chairman of the Merchandising Division, for leading in the organization of a good program and encouraging more widespread development of activity. Details were given of numerous services furnished by the secretary's office and a complete financial report was presented.

National president, M. J. Garvey of St. Joseph, Mo., in a forceful address on "Meeting the Challenge" urged that the industry's primary attention be devoted to insuring the future security of the ice business. He reviewed the early problems which had challenged management and conditioned it for the problems ahead. Of great assistance, he asserted, is the cooperative effort through the medium of the National Association. He reviewed the extensive work of this representative national organization and discussed features of its further activity. Mr. Garvey cautioned that there is no short cut to success but that a complete and aggressive program covering all phases of management, public relations, merchandising and development is required.

A report on the public relations activity of the National Association was presented by Guy W. Jacobs, director of that department. He analyzed the broad results obtained for the benefit of the whole industry and emphasized the great volume of news articles which had been developed as a supplement to paid advertising. The details of the proposed 1949 public relations campaign were graphically presented and analyzed in a slide film. It showed how well the program is arranged to answer the needs and desires of all types and sizes of industry operations. In summary, Mr. Jacobs emphasized that the extent of the program will depend upon the support given by the industry and explained what valuable results will accrue through full support by all who will benefit.

Second Session

A report on the activities of the Illinois Ice Merchandising Council by its president, Don Lock, opened the second session. He described the very productive meetings which had inspired merchandise managers during the year and brought out many ideas which had proved helpful and sound. Real merchandising, Mr. Lock said, implies complete activity to promote the sale of ice, the sale of appliances, and the best possible service. No avenue of ice useage should be overlooked because many which did not show great promise have been developed into important consumers. The vegetable display field continues to offer excellent opportunity, he declared, and all produce dealers should be fully informed on the advantages of iced displays at the same time that complete service is made available to them.

The work of the Personnel Training and Marketing Department of the National Association was discussed by Dan Prager, director. He reviewed the past developments and results obtained by a real merchandising program including thorough training of sales personnel. The way to increase sales in the future, he declared, is to expand this training. Mr. Prager described the complete assistance his department provides to facilitate training by member companies. Those who have taken the National Ice Marketing Institute course were quoted to show how much benefit they had obtained and members were invited to send their personnel to the institute.

The value of automatic ice vending stations in providing complete service to ice users was discussed by F. B. Dickinson, Manufacturers Sales and Service Co., Des Moines, Iowa. He detailed the advantages of making quality ice available to consumers on a convenient 24-hour basis. Mr. Dickinson declared that modern merchandising requires the best of ice and the best of service along with an all-out selling program. He reported the results produced by automatic vending stations in locations ranging from large cities down to small communities.

Mr. Lock led in a general discussion of merchandising methods and problems, then the session was concluded with the election of the following officers of the Illinois Ice Merchandising Council:

President, Wallace Wrigley, Peoria
Vice-president, M. W. Deckard, Springfield
Secretary, Francis Reed, Galesburg.

Third Session

Production and engineering subjects featured the final session. A sound movie on water demineralization was presented by W. D. Grafton, American Cyanamid Co., New York City, who followed with a discussion of the advantages which demineralized water brings to many ice plants. He described the freezing of ice without removing cores and the other benefits of using this equivalent to distilled water.

The Mollier Chart was explained by James Oldani, chief engineer, Central Illinois Ice Co. He then demon-

strated its valuable uses in plant operation. He pointed out that by checking operating conditions with the chart, it is possible to determine the condition of the compressor and several problems were worked to fully illustrate. Mr. Oldani declared the annual overhaul of compressors is not required if this method of checking is used. He reported on machines running for thirteen years without being opened.

Plant maintenance was discussed by James Stubblefield, Public Service Ice Co., Cairo, who emphasized that not all maintenance should be done in an off-peak season. A close check should be maintained of the operations at all times because minor repairs and adjustments made promptly will prevent many major repairs. A good log sheet and suitable instruments, he said, are invaluable and, in addition, a note book should be kept to indicate the work needed later. The details of an effective maintenance program were presented.

A panel discussion on plant operation was led by Emerson Brandt, ICE AND REFRIGERATION, Chicago. In addition to the two previous speakers, the panel included Edward Brown, Artesian Ice Co., Fort Madison, Iowa, and Eugene Rytlewski, Westerlin & Campbell Co., Chicago. A number of questions were discussed by various members of the panel. Mr. Rytlewski summarized a number of them with blackboard drawings to illustrate correct connections and sizing and arrangement of equipment. He gave many suggestions for improving condenser operation, reducing discharge pressure and power consumption and obtaining needed capacity.

The reports of the convention committees were presented and accepted. The report of the nominating committee was approved and the nominees were elected to the board of directors as follows: James Stubblefield, Cairo; Earl Prince, Sterling and Wayne Dickerson, Harrisburg. The meeting was then adjourned.

Southern Ice-Georgia Association, Joint Annual Meeting

THE 60th convention of the Southern Ice Exchange and the 31st convention of the Georgia Ice Manufacturers Association, held jointly January 19-20 at the Ansley Hotel in Atlanta, Ga., attracted more than 300 delegates from Georgia, Florida, Alabama, North Carolina, South Carolina and Tennessee.

Milton E. McLain, of Buford, Ga., president of the Georgia Association, presided at the opening session.

Taylor Brings Message

"The economic gravy train has passed," declared Mount Taylor, Executive Secretary of the National Association of Ice Industries in an opening session analysis of 1949 problems. He announced that the national group during the current year plans to place more emphasis upon national advertising and public relations; better employee selection and training; and upon research and engineering.

G. S. Sherrod, of Greensboro, N. C., and H. D. Chappell. of Greenville, S. C., described the fine work being done by the Ice Marketing Institute, set up by the National Association of Ice Industries to train personnel.

Marvin Griffin, Lieut. Governor of Georgia concluded the first session with an address in which he welcomed the delegates and stressed the importance of good government.

Second Session

E. H. Diemmer, of Brunswick, Ga., President of the Southern Ice Exchange, took over the gavel for the second session.

M. G. Murray, Jr., of the Nehi Corporation in Columbus, Ga., pulled no punches in pointing to ways in which the ice industry could improve. He said better merchandising plans and selling jobs should be stressed.

H. R. Creamer, of Augusta, Ga., outlined plans for national advertising. He said the program will be better rounded, with local tie-in advertising increasing.

R. V. Sisk, of Charlotte, N. C., showed how plant improvements make it possible for owners to reduce their operating costs. At the same time, he pointed out, the improvements enable operators to do a better job.

Citing proven solutions to service problems, Harold Clotfelter, of Rome, Ga., emphasized the importance of employee training, personal contact with customers and maintaining proper equipment and trucks.

Mr. McLain presided at the busy final session of the convention at which William T. Jobe, General Counsel for the National Association of Ice Industries, outlined some of the legal problems.

J. Russell Calvert, of Los Angeles, Calif., presented a strong argument for increased advertising in the ice industry. He cited the results advertising had obtained in making famous the products of other fields. "Ice has a definite place in our high standard of living today," Calvert stressed. "Let's tell the story of ice forcibly, effectively and conclusively."

Way to New Profits

Showing the way to new profits, John F. Causey, of Miami, Fla., told dealers to get away from the idea of tonnage and pay more attention to selling an eye-catching package. He explained how an advertising program during the Christmas and New Year's seasons had boomed the sale of ice cubes in South Florida. He said dispensing cabinets located in stores and bars were doing a heavy volume in cube ice packages, selling five pound bags of cubes for 35 cents. Platform demand for packaged ice cubes was high, he announced, as results of an advertising program that used cards, newspapers, posters, bus cards, blotters, paper napkins and stirrers. Mr. Causey advocated bringing more women into the ice business.

Profitable Merchandising

John H. Glenn, of Beardstown, Ill., drew from answers to questionnaires he mailed to members of the industry and from his own experience to formulate conclusions on profitable merchanditing. "We must spend our money and direct our efforts toward the selling of ice from the time it leaves the ice plant dock," he maintained. He said the industry must sell ice-using appliances to maintain its war tonnage sales; ice must be made convenient and available; ice must be sold in the form most desirable to the public; the industry must train and supervise ice servicemen to meet the approval of old and prospective customers.

Mr. Glenn advocated the opening of down town retail stores by plant owners. Its primary function, he said, should be selling ice-using appliances. He drew applause when he opposed the selling of mechanical refrigerators by ice plant manufacturers. He pointed to the importance of modernizing plants, installing labor saving devices to pro-

duce ice at less cost, and streamlining delivery systems. He also told how route men should be encouraged to turn in prospects for new refrigerators.

A special resolution was drawn at the joint conventions on the death of Thomas F. Lilly, president of The Lilly Company. Other resolutions expressed appreciation to the Ansley Hotel and to the Atlanta ice industry for the hospitality accorded the convention.

Entertainment features included the annual banquet for delegates and their ladies. A highlight for lady visitors was a tea and fashion show, with Atlanta's new Franklin-Simon store as host.

Officers for the two associations were elected as follows:

Georgia Ice Manufacturers Association

President, H. D. Hopkins, Atlanta, Ga.
Vice-president, Harold Clotfelter, Rome, Ga.
Secy.-treas., Willshire Riley, Atlanta, Ga.
Board of Directors: E. L. Butler, Camilla, Ga.; D. I. Lee, Macon, Ga.; M. E. Pittman, McRae, Ga.; Joel Knight, Atlanta; W. F. Robertson, Savannah; C. J. Romberg, Gainesville, Ga.; W. D. Garvin Sr., Savannah; E. L. Gunn Jr., Atlanta; Charles L. Henry, Atlanta; D. C. Hancock, Cartersville, Ga.; A. J. Gordon, Atlanta; and Alvah Nelson, Thomaston, Ga.

Southern Ice Exchange

President, E. H. Diemmer, Brunswick, Ga.
Vice-president, C. L. Crossfield, Gadsden, Ga.
Secy.-treas., Willshire Riley, Atlanta.
Board of Directors: R. V. Sisk, Charlotte, N. C.; Kline E. Harris, Spartanburg, S. C.; E. L. Gunn Jr., Atlanta; W. W. Simmons, Jr., Memphis, Tenn.; C. D. Castleberry, Atlanta; J. D. Mallary, Anniston, Ala.; W. R. Crossfield, Griffin, Ga.; J. S. Ostner, Jacksonville, Fla.; George L. English, Columbia, S. C.; Harry Creamer, Augusta, Ga.; C. B. Romberg, Gainesville, Ga.; and J. K. David, Jacksonville, Fla.

Northwest Association of Ice Industries

By D. D. Stewart, *Secretary*

THE annual convention of the Northwest Association of Ice Industries will be held Tuesday and Wednesday, March 15-16, at the Davenport Hotel, Spokane, Wash. Representatives of the National Association of Ice Industries will be on the program together with other important speakers.

Reports on the progress of the National Ice advertising campaign have been received by Northwest members with enthusiasm. This report tells an amazing story of accomplishment and should be read by everyone in the ice business. Plans for the local campaign were thoroughly prepared and are now underway. The Northwest association now owns and has available for members, the technicolor sound film, "Naturally Yours." This film was shown at the 1948 convention.

California Association of Ice Industries

THE California Association of Ice Industries will hold its 29th annual convention at the Biltmore Hotel, Los Angeles, March 21-23, 1949. Attendance is expected to exceed previous years according to the committee in charge. Many special events and activities are planned and it is hoped that it will be an outstanding meeting. A delegation of Texas ice men will attend, for which reason a three-day session has been scheduled. This makes it possible to include ample time for the convention sessions as well as visiting exhibits and social activities.

Oklahoma Association of Ice Industries Annual Meeting

THE 45th annual convention of the Oklahoma Association of Ice Industries was held at Oklahoma City Monday and Tuesday, January 24 and 25 during the worst blizzard of the season. But a good crowd of members and guests braved the snow and icy weather to hear a very worthwhile program and 175 were present for the annual dinner dance.

Charles T. Evans, of the Arkansas Power & Light Co., told the group the ice industry had returned to a buyers' market and warned them that to stay in business they must work at selling ice, through advertising and training programs.

J. Russell Calvert of Los Angeles outlined the ice advertising program now being carried on in California. He added his voice to other speakers in urging a local advertising campaign to back up the national campaign.

Ice Advertising

Guy W. Jacobs, head of public relations for the National Association of Ice Industries, spoke at a morning session, outlining the National Ice Advertising program for 1949. In his address, "Telling the World about Ice," a part of the material created to carry out the program was projected on a screen.

Dean Nourse, Bristow, Okla., assured those present that the ice business is not on its way out. New uses, he said, are being found for ice and science has shown that it will do many tasks better than mechanical refrigeration. Last year, he said, he sold 132 pieces of equipment in a market of 65,000 population. He had done an excellent job of merchandising and his talk was well received by every one present.

Henry Shimpach, Southwest Ice & Dairy Products Co., Altus, Okla., told of the benefits derived by him and others who attended the National Ice Marketing Institute at Washington, D. C. The enthusiasm manifested in his talk regarding the advantages of attending this school was passed on to the audience, and several in attendance were heard to say that they planned on sending a man in the future to attend this institute.

Planned Selling

Dan Prager in "Planned Selling Pays Off" emphasized the fact that there is a serious need within the ice industry for activity to stimulate more progressive merchandising of ice in its various forms and ice appliances. He stated that "Planned Selling" will demand well-trained sales and service personnel, and that it will require leadership of the highest order, and that top management should "sparkplug" the whole business.

Paul H. Andres, Southwest Ice & Dairy Products Co., Oklahoma City, gave the closing address "Significant Facts." These facts signify the trends of today's business, and Mr. Andres told the convention how they might be interpreted. He stated that the ice industry can increase and maintain the present volume if every facility that is available is used to sell ice refrigeration service.

New Officers Elected

New officers were elected as follows:
President, W. B. Moran, Shawnee
First Vice-president, Clarence Page, Purcell
Second Vice-president, Earl Johnson
Treasurer, C. E. Simmon, Oklahoma City
Secretary, Walter A. Hadley, Oklahoma City

Gulf Coast Ice Association

MEMBERS, friends and associates of the Gulf Coast Ice Association journeyed from Dothan, Evergreen, Enterprise and Andalusia, Ala., Pensacola, DeFuniak Springs, Panama City, Marianna, Jacksonville and Graceville, Fla., to attend a quarterly meeting held at the beautiful Wakulla Springs Hotel at Wakulla Springs, Florida, January 11, 1949.

H. Louis Hill, an official of the Middle Florida Ice Co. of Tallahassee, was elected president for 1949. Mr. Hill succeeds President L. E. Johnson of Marianna. Other officers who will serve with President Hill are: Guy Spearman, Jr., Pensacola, vice president; T. A. Braughton, Andalusia, Ala., secretary-treasurer; and L. E. Johnson, Marianna; D. H. James, Enterprise, Ala., and Gene Faulkner, Dothan, Ala., members of the board of directors. The new members were presented to the meeting by retiring President Johnson.

At a business session held in the afternoon Edward H'll of Tallahassee, member of the board of the National Association, discussed the objectives of the National Association of Ice Industries and urged all members of the Gulf Coast Association to take advantage of the many opportunities offered by membership. Mr. Hill also stressed tht importance of NIPR and the National Ice Marketing Institute. Muriel Washburn, Secretary of the Florida Association, outlined what a state association means to the ice industry. Mayor Fred N. Lowry of Tallahassee welcomed members and guests at the Association banquet and Max Kilbourn of Panama City responded to the Mayor's welcome.

Senate President-elect Newman Bracken of Crestview gave the principal talk of the evening. Senator Bracken gave an interesting and informative resume of the invention of the first ice machine by Dr. John Gorrie in Apalachicola, Fla., in 1844 and discussed the many benefits humanity enjoyed as a result of Dr. Gorrie's invention.

The Gulf Coast Ice Association was organized in June 1947 and started as a merchandising council for north Florida and south Alabama ice manufacturers. It has now developed into a full-pledged association with an all-round program.

Indiana Association of Ice Industries

By O. P. FAUCHIER, Secretary

TUESDAY, Wednesday and Thursday, April 12, 13 and 14 will be among three of the most important days of 1949 for all ice men in Indiana, as those are the days on which the fifty-fourth annual convention of the Indiana Association of Ice Industries will be held at the French Lick Springs Hotel, French Lick, Ind.

At a meeting of the convention committee and the secretary, held in the Association office recently, many new and novel features that will add greatly to the value and the pleasure of the meeting were planned. As a result of this and other meetings that will be held later by the committee, we guarantee that the 1949 convention will be by far the best we have ever had. And in addition to the fine entertainment and business program, what could be a nicer short vacation for members and their ladies than a few days at beautiful French Lick. It will be at the height of its beauty the middle of April.

The Association has bought a copy of the National Association's technicolor sound film "Naturally Yours" and a projector with which to show it. Field Secretary Bob Walten will show the picture to grocers' meetings, Rotary, Kiwanis or other civic groups, as well as women's clubs or other organizations without cost to members.

Muckerman Sells St. Louis Browns

CONTROLLING interest in the St. Louis Browns, American League baseball club, has been sold by Richard C. Muckerman, Exec. vice-pres. of City Products Co., formerly City Ice & Fuel Co. of St. Louis, to the De Witt Brothers, Bill and Charley. They purchased the 56 per cent of stock which Mr. Muckerman owned and they now possess a total of 58 per cent, as they previously had 2 per cent themselves. Although no official figures were revealed, it is believed the De Witts paid $1,000,000 in the transaction. Mr. Muckerman has owned a controlling interest in the Browns since 1945 at which time he purchased the interest held by Donald L. Barnes who retired at that time as president.

Court Rules No Need of Receiver

THERE was no evidence that the Louisiana Ice Co., 2465 Texas Ave., Shreveport, La., was mismanaged or in financial stress which would justify appointing a receiver, Judge James U. Galloway held recently in dismissing a suit brought against the company in Caddo district civil court last fall.

The suit was filed by Claud Kinnebrew and Mrs. Irene K. White, two of the company's stockholders, and claimed gross mismanagement on the part of the company's board of directors, S. R. Morgan, Jr., W. E. Morgan, S. R. Morgan, Sr., and Charles E. Elkins. The petition alleged that the directors operated the company as though it were their own personal property.

Mississippi Mule Knows Ice Route

THERE is nothing stupid about one certain Delta mule name of Rabbit, according to a news story from Greenville, Miss. This mule has been pulling an ice wagon in downtown Greenville for nine years. And when Rabbit's driver is delivering ice, Rabbit will pull up to a stop light and wait for it to turn green before moving on. The mule will also maneuver into a parking space between two automobiles, and without batting an eye. And after the ice is delivered at one spot, Rabbit will go on to the next. Furthermore, if the ice-wagon has a green driver aboard, Rabbit will not let him go past a regular stop. The mule just pulls up and waits.

Mountain States Association of Ice Industries

By J. REIMER ESPY, Secretary

THE annual convention of the Mountain States Association of Ice Industries will be held at the Antlers Hotel, Colorado Springs, Colo., March 25 and 26. The program will be very much like the one last year, made up of discussions of engineering and plant operating problems, merchandising discussions and round-table talks by and for managers.

Florida Association Offers Course On Ice Manufacturing

UNDER the direction of the Florida Ice Association a short course on ice manufacturing will be held at Gainesville, Fla., March 14, 15 and 16 which is expected to attract many Florida ice manufacturers. The course will be given by the general extension division of the University of Florida, conducted by faculty members of the College of Engineering and the College of Arts and Sciences. Both colleges have faculty men who are equipped both in theory and in practice to help the ice manufacturers with some of their problems.

Frozen Foods
Reg. U. S. Patent Office
COVERING EVERY PHASE OF THE QUICK FREEZING OF PERISHABLE FOODS—PREPARATION, PACKAGING, FREEZING, STORAGE, DISTRIBUTION, DESIGN, CONSTRUCTION, EQUIPMENT, OPERATION OF LOCKER PLANTS.

Western Frozen Food Processors Association Annual Meeting

By J. J. Hoey

SOME one event, feature or "highlight" usually marks any convention of thoughtful and earnest businessmen, and in the case of the annual membership meeting of the Western Frozen Food Processors Association, held in the Hotel Fairmont in San Francisco February 10 and 11, the outstanding feature was the cutting of packers' and commercial samples of various frozen vegetables and fruits produced, packed and sold in California. It was outstanding in the sense that this cutting and the accompanying careful judging for quality showed an improvement in the frozen products.

The progress of the California food-freezing industry toward distinctly higher levels of quality can be measured by comparing the products cut and judged at this meeting with those similarly handled at a cutting just a few years ago by the California freezers at the Western Regional Research Laboratory at Albany, Calif. The improvement in quality of all products was quite evident. It must be admitted that in past years the output of California frozen food plants hardly could maintain the high position occupied by the more experienced packers in other sections of the country. The showing made at this meeting goes far toward establishing the Golden State as a producer of first-grade frozen foods.

Cutting Demonstration

The arrangements for the cutting of frozen food samples were ideal, in that ample space permitted a well-spaced showing of products on the great long tables, and plenty of room for all to view these in comfort, one of the ballrooms of the Fairmont being utilized for the purpose. The smooth running of the entire meeting, everything being exactly on schedule from first to last, was a testimonial to the efficiency and complete capability of A. H. (Bert) Harrison, executive secretary and manager of the Western Food Processors Association.

Although the main interest of the large attendance was in seeing and studying the various plant and retail store samples, the showing of one particular frozen product proved of exceptional interest. This was the sample of frozen Brussels sprouts "slipped in" by D. Glenn Sorber of the Western Regional Research Laboratory, these having been frozen eleven years ago and stored at that institution ever since! The sprouts showed a slight "browning" of the brect ends but otherwise looked as though they might be cooked and well-enjoyed today.

While California is widely and favorably known for the variety and high quality of its fruits, the freezing of these has dropped in relative importance to its vegetable output. Where the state at one time in its early career packed fruits in the proportion of two to one as compared with vegetables, the trend has now reversed and the proportion of vegetables frozen is that of two to one of fruits. Fact is, California's fruits though delicious in their fresh form are not always of the varieties that make the best frozen pack. And some berry varieties are not grown here at all, in commercial quantities, such as blueberries, dewberries and a few others. On the other hand, California

—Photo Western Canner and Packer

Head table at annual banquet Western Frozen Food Processors Association. Edgar M. Burns, secretary of Northwest Frozen Foods Assn., and past-president of NARW; Mrs. Burns; F. J. Becker, president, National Association of Frozen Food Packers; J. O. Dempsey, re-elected president of WFFP Assn.; A. H. Harrison, secretary, WFFP Assn., and Mrs. Harrison.

vegetables seem to possess all the desirable characteristic good qualities desired in a prime frozen product, with again the exception that some other regions produce a better sweet corn.

Attendance Large and Interested

Frozen food packers were present from all parts of the State, supplemented by a goodly turnout of the wholesale and brokerage trades, and the cutting and judging of samples attracted a large number of food technologists

from the University of California, the Western Regional Research Laboratory and the Refrigeration Research Foundation of America.

The judging and scoring of the exhibited fruits and vegetables served an indispensable need of the business in that this disclosed that while quality of product was quite good, there was room for improvement, and to this end the packers and technologists could well direct their earnest efforts in the future.

The Association members in their business sessions surveyed the food-freezing situation, gave consideration to the various problems that face the industry and heard the reports of their officers covering the activities of their organization in the year just closing. It was decidedly a forward-looking and confident attitude that marked the deliberations, tempered by the realization that business must adopt operating methods more in line with the times.

The banquet held in the Red Room of the Fairmont on the evening of the 10th provided the relaxation which seemingly all conventions need, and also furnished the members with just enough serious discussion, through the talks made by President James O. Dempsey, R. J. Becker, president of the National Association of Frozen Food Packers, and Edgar M. Burns, retiring head of the National Association of Refrigerated Warehouses. Music enlivened the proceedings at intervals, and the Standard Oil Co. of California gave the members a thoroughly interesting and instructive depiction of the oil operations and the attending social and economic effects of such operations upon the peoples of the Middle East, by means of a color film of exceptional merit.

Officers and Directors Elected

Election of officers and members of the governing board of the Association took place on the concluding day of the meeting and resulted in the selection of the following four directors to serve for the term starting with this meeting: James O. Dempsey of Dempsey, Hudson Packing Co.; M. K. Spiegel of Spiegel Farms, Inc.; Ken Roberts of Honor Brand and C. L. Kirk of Pict-sweet. New officers chosen for the coming year were: President, James O. Dempsey, Salinas; vice-president, M. K. Spiegel, Salinas; treasurer, Ken Eberts, Oakland; secretary and managing director, A. H. Harrison, San Francisco.

Grades of Frozen Pineapple

THE first of the United States Standards for Grades of Frozen Pineapple has been issued by the Department of Agriculture after careful consideration of all data and views submitted by individual members of the industry, trade associations, and from other sources. These standards were published in the Federal Register December 25, 1498 (13 F. R. 8321) and became effective on January 25, 1949.

They are designed to serve as a convenient basis for sale in wholesale transactions and as a basis for determining loan values. They will also serve as a basis for the inspection of this commodity by the Federal inspection service, which service is available for inspection of other processed products as well.

It is the desire of the Department to build standards of quality that will (1) faithfully represent the steps or differences in market value and (2) bring about a uniform quality of description in simple easily understood terms upon which satisfactory trading can be effected. Frozen food packers are asked to write the Department in detail concerning any improvements which they may wish to suggest in order that such suggestions can be considered in connection with any future revisions of the standards.

All Industry Frozen Food Meeting

FROZEN Food Packers are planning an interesting meeting in an All-Industry Frozen Food Convention and Exposition to be held at the Hotel Stevens in Chicago, starting March 6 and running through March 10. The general convention committee is made up of presidents of the five National Associations and one president from the local association located in the convention city and a representative from the supply companies who are the exhibitors.

This is the first time that all of the presidents of the five associations have met to do an all-industry job. This seven-man committee has full charge of the general convention and exposition management. There will be three conventions going on at the same time in Chicago,—the Packers, the Preservers, and the Distributors. Each group will conduct their own association meetings and affairs. There will be one general session at which time each National president will give his report to the industry. At this meeting, there will be packers, brokers, distributors, preservers and warehousemen.

Also, for the first time in the history of the organization there will be thirty frozen food packers exhibiting frozen foods on the exposition floor along with the supply and machinery exhibitors. The commodities shown will include fruits, fruit juices, vegetables, sea food, meat, poultry and specialty items. The distributors in the Chicago area are inviting the retail store owners and their employees to see this showing of the foods and it is expected that somewhere between 15,000 and 20,000 retailers will visit this show. In addition there will be some 300 home economists who will visit the show.

Plans are now reported under way to set up an all-industry committee this year comprised of the presidents of all of the National Associations, including packers, preservers, brokers, distributors, warehousemen and transportation companies. This group will meet as often as necessary for the purpose of sitting around the table and discussing among themselves their industry problems.

Frozen Poultry Appeal to Housewives

CONSUMERS will like chicken better and eat more of it when industry furnishes them with more ready-to-cook fryers that have been quick-frozen while fresh—that is, frozen at the peak of their flavor perfection, and produced and processed to a stabilized standard. That's the way J. D. Jewell, of J. D. Newell, Inc., Gainesville, Ga., sized up the "fresh or frozen" question in his talk on this subject at the Institute of American Poultry Industries' Fact Finding Conference February 8, in Kansas City, Mo.

Mr. Jewell firmly believes quick-frozen fryers are the only answer because their quality can be standardized, and this is important since housewives want the same quality week in and week out, in chickens as well as cereal, soup and other foods.

Economics-wise, the quick frozen picture is bright too, for well planned operations from hatching to freezing, storing and selling make it possible to put quick-frozen fryers into the store and on to the consumer's table at a most reasonable price, compared with other forms of poultry and other meats. And retailers find the frozen product more standardized, easy to carry over if necessary, and less time-consuming when it comes to waiting on customers.

On top of all these advantages, Mr. Jewell pointed out that when there are so many ready-to-cook competitive foods such as bread mixtures, instant tea, pre-cooked foods and others, on the market—it would be foolish for the poultry industry to try to keep on going in the same old rut.

A W A Convention

(Continued from page 35)

Entertainment and Social

The entertainment and social events were handled by a committee made up of San Francisco members of the warehousing industry, with Leon A. Bailey and J. W. Howell in charge of general arrangements and A. W. McTavish heading the entertainment committee. Mrs. J. W. Howell and Mrs. H. F. Hiller were in charge of the Ladies' Hospitality Committee. The California warehousemen were hosts.

The committee on arrangements undertook to plan a uniquely entertaining social program for each afternoon and in this effort they were completely successful. The events were colorful and enjoyable. The morning hours were left free for guests and ladies to pursue their own pleasures and many of them took advantage of the opportunity to go shopping.

Monday afternoon members of the convention were guests of the California Warehousemen on a boat cruise around San Francisco Bay.

Monday evening and again Tuesday evening, the ladies and gentlemen of the convention were guests at a hospitality hour.

Tuesday noon a ladies luncheon was given at the hotel followed by a Chinese fashion show featuring antique oriental robes and modern adaptations.

Tuesday evening the AWA family party and dinner dance was held, followed by a floor show and dancing.

Wednesday afternoon the ladies were treated to a 49-mile scenic drive in and around San Francisco. The trip was made in chartered Gray Line buses. Points of interest included Chinatown, Civic Center, Latin Quarter, Telegraph Hill, Fishermen's Wharf, Fort Mason, Yacht Harbor, the Presidio, Cliff House and Seal Rocks, Golden Gate Park, Twin Peaks, and historic Mission Dolores.

Wednesday evening ladies and gentlemen of the convention were guests of the association at the president's reception and this was followed by the 58th annual AWA dinner at which Harlan J. Nissen, general president, presided and very effectively called on other leaders of the two divisions for short speeches. During the dinner hour, high class orchestra music was furnished and after dinner, there was dancing until midnight. Thursday noon a farewell luncheon was held for the ladies and this was followed by a demonstration of flower arrangements by Mr. Lou Huff, Podesta and Baldocchi, "America's Most Famous Florist."

Frozen Food Packers Oppose Changes In Fair Labor Standards Act

OPPOSITION to amendments to the Fair Labor Standards Act as incorporated in H. R. 2033 was expressed by Ralph O. Dulany in testimony before the House Committee on Education and Labor, on behalf of the National Association of Frozen Food Packers. Mr. Dulany's testimony before the House Committee gave particular emphasis to the frozen food industry's need for the present overtime exemptions that are now permitted. It was pointed out that speed is essential in the harvesting, processing and freezing of fruits and vegetables and that unless this operation can be completed in a short time, disastrous losses are sustained.

Mr. Dulany called attention to the fact that the uncertainties of weather conditions tend to exaggerate seasonal work peaks, so that in spite of all efforts to schedule work in processing plants in an orderly fashion, it is impossible to avoid rush periods when long hours must be worked. He declared that sufficient standby labor simply is not available to handle the seasonal work load without having employees work over 40 hours per week.

Member Activities

(Continued from page 59)

was learned that Los Angeles Chapter got away from the post with a startling burst of speed in the current 1949 campaign. With the quarter pole barely in sight, Burnett disclosed that tabulations, as of February 2, showed the chapter already to have enrolled 30 new members. This is considerably greater than the number signed up at the comparative period in either the 1947 or 1948 drives. The last two winning drives were marked by a tremendous home-stretch run by Los Angeles Chapter in which it overcame leads piled up earlier by New Orleans, Chicago, et al. By reversing the tactics and getting off to a running start at the very outset of the campaign, Burnett evidently hopes to embroil the "opposition" in confusion to such an extent that a third successive pennant can be hung on the wall of the Los Angeles meeting place this fall. (P.S.: The early start notwithstanding, Burnett promises a homestretch drive comparable to the ones that brought home the bacon in 1947-48).

The educational session was featured by a dual talk on "Orange Juice Concentration by Refrigeration." R. W. Mojonnier of the Mojonnier Bros. Co. and Charles Shapiro of York Corporation collaborated in presenting the talk. One discussed the subject from the angle of refrigeration principles and techniques; the other describing the machinery, and other mechanical phases involved in orange juice concentration by refrigeration.

Second vice-president Elmer A. Johnson, who doubles as class instructor, directed the preliminary refrigeration class in a discussion of "Heat." A tribute to Johnson's classroom technique is the fact that usually for a half hour before each meeting, the group in his classroom is composed of nearly as many veteran refrigeration engineers, who drop in before the business meeting starts, as do students and journeymen.

Refrigeration Research Foundation

(Continued from page 48)

With some varieties of apples, and pears a physiological disorder known as storage scald has long been known to take a heavy toll some seasons. Early work by U.S.D.A. workers demonstrated that some of these scald-causing gases could be absorbed by fresh mineral-oil-impregnated paper fruit wraps. Extensive use of this technique has been made by the apple and pear industry. Complete control of scald was not assured, but as a partial control measure, it has had great merit.

Commercial lots of apples were selected and placed in apple storage rooms. The Dorex Canister type air purification was then placed in operation and duplicate samples were placed in a similar cold storage without air purification. Inspection on January 8, 1949 showed beneficial results in every case in favor of those samples placed in storage under air purification.

The cost of air purification, the speaker concluded, when judged in the light of what it can accomplish is not high. Equipment and the annual reactivation of the carbon when pro-rated over a five-year period need not exceed more than ¾ cents per cubic foot of storage space per season.

Chicago Section, ASRE

THE January meeting of the Chicago Section, American Society of Refrigerating Engineers was held at the Builder's Club. The feature paper of the evening, "Sanitary Plate Heat Exchangers" was given by Dale Gillespie of The Creamery Package Co.

He described their construction and operating details, pointing out their extreme flexibility and ease of access, explaining that they are constructed of stainless steel sheets, die-formed so that adjacent sheets form passages for the flow of liquid. The addition of vulcanized synthetic rubber gaskets to each plate makes them suitable for assembly in clamped sets. By the strategic placement of the gaskets a variety of circuitings is made possible, making them applicable to many different processes in the dairy, brewing, wine-making and food preserving industries.

A typical application in the brewing industry provides the means for transferring the heat of the wort to the make-up water, thus accomplishing two necessary results in the one operation: the wort is cooled and the incoming make-up is heated.

Plate heat exchangers have found a ready acceptance in all processes where sanitary conditions are of prime importance. A bank of cells is easily unclamped and opened plate by plate for visual inspection as well as thorough cleaning by means of scrubbing. Preliminary cleaning may be done by circulating a detergent through the system. In the dairy industry for instance, open inspection and scrubbing are a daily routine.

Other advantages of this type of heat transfer are (a) compactness, (b) flexibility (for adaptation to a new process or removal to a new location), (c) ease of adding more plates to a bank when an increase in capacity is desired, (d) relatively high "k" factor with a comparatively low pressure drop.

Possible disadvantages are (a) unsuitability to direct-expansion cooling, (b) comparatively short life of the rubber gaskets (which are replaceable at the factory), (c) maximum inlet pressure of approximately 30 p.s.i.

Mr. Gillespie interspersed his talk with many specific application examples and numerous lantern slides. He also presented for the members' inspection, samples of plates from three of the manufacturers now engaged in making Plate Interchangers.

A lively question and answer session following the paper attested to the interest in this relatively new subject.

Standards on Mineral Wool Insulation

THE Commodity Standards Division of the National Bureau of Standards announces that printed copies of Commercial Standard CS105-48 covering mineral wool insulation for low temperatures (second edition), are now available. This standard covers minimum physical and chemical requirements of mineral wool in loose, granulated, felt, industrial batt, and board or block forms. It includes thicknesses of insulation required for various operating temperatures, specifications for auxiliary materials, tests, installation requirements, and method of guaranteeing compliance with the standard.

The booklet also includes a brief history of this standardization project, a list of the acceptors; and the membership of the Standing Committee, the chief function of which will be to consider revisions of the standard to keep it abreast of progress in the industry. Printed copies of CS105-48 may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., for ten cents per copy.

Standards for Blower Coils

UNDER the guidance of the Joint Coil Committee of the Refrigeration Equipment Manufacturers Association and the Air Conditioning and Refrigerating Machinery Association, Inc., the commercial refrigeration industry is making definite progress in the development of recommended industry standards for blower coils. Already the groundwork has been laid for a constructive program which will be of value to the refrigeration industry. Members of the Joint Coil Committee which were selected by the refrigeration industry are now carrying out the various assignments which will make the objectives of the Committee possible.

The joint Coil Committee had its inception in January, 1948, at the REMA Convention when the Low Side Equipment Product Section pointed out that there was a need for such industry standards which could be used as a guide by the entire industry. It was decided that a committee of five representatives of REMA and five representatives of ACRMA would be formed and assigned this project.

The Committee has outlined its four principal objectives as:

(1) to develop suitable industry standards for forced-circulation air coolers for refrigeration covering recommendations on methods of testing and rating, minimum standard equipment, safety requirements, and minimum published data;

(2) to recommend application standards pertaining to forced-circulation air coolers for refrigeration;

(3) to develop suitable industry standards for natural-convection air coolers for refrigeration covering recommendations on methods of testing and rating, minimum standard equipment, safety requirements, and minimum published data; and

(4) to recommend application standards pertaining to natural-convection air coolers for refrigeration.

Bulletin Tells Value of Standards

THE publication in a single pamphlet of a series of papers on the subject "What Good Are Standards?" is announced by the American Standards Association. The papers which were presented at the 1948 annual meeting of the Association, include discussions of such important problems as the legality of standardization, the standardization work of the Munitions Board, and the functions of standardization in such company operations as purchasing, manufacturing, and marketing. The importance of standardization to wholesalers and retailers, and to the ultimate consumer, as well as to manufacturers, is taken up by authorities in each field. Copies may be obtained from the American Standards Association.

The paper by John F. Sonnett on the question "Is Standardization Legal?" presents the viewpoint of the former Assistant United States Attorney General on a problem that is receiving wide attention in the press today. Mr. Sonnett explains that standardization is an economic necessity in a mass-production system such as ours, and it becomes unlawful only when it is used as a device for the suppression of competition. He refers to the Supreme Court decisions affecting industry-wide pricing systems in the Sugar Institute case and the Cement Institute case. Pending Congressional clarification of problems raised by these decisions, producers of standardized products should make "independent competitive determination" of their prices, he says. "The price charged by a business man should be his own price, whether or not his product is standardized, and whether or not his price is the same as his competitors," he declares.

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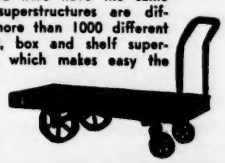

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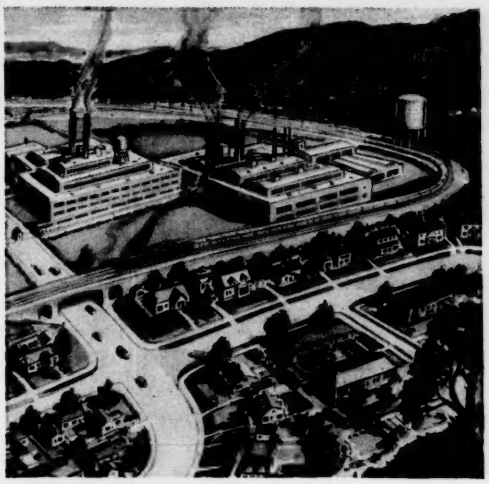

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Layne well water producing equipment has always been designed and built to outlast any other made. The use of finest materials throughout, plus rugged strength and manufacturing craftsmanship practically eliminates breakdowns and costly repairs.

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We have also gotten away from those annoying valve breakages which cause so much loss in time and capacity as well as worry over danger to the machines. During the past four seasons we had no breakages of valve springs or plates and are glad to tell you about this satisfactory service obtained with Voss Valves.

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Sales and Reorganizations

Sullivan, Ind.—James D. Atkinson of the Bicknell Ice & Coal Co., Bicknell, has bought the ice plant and business of the Merchants Ice & Coal Co. here. It will be operated under the name of the Atkinson Ice Co. Plans are under way for complete modernization of the plant and business by installation of a fully automatic one-man ice plant of 36 tons daily capacity.

Pineville, La.—Announcement of the sale of the Pineville Ice Service Delivery, Inc. to Central Louisiana Electric Co. Inc., was made January 10, 1949. The sale includes a tract of land located on Main St. with complete ice plant located thereon and all ice making machinery and equipment. Sale price was listed at $51,646.62.

Holdredge, Neb.—Sam T. Schrock has purchased the ice plant and former power building of the Consumers Public Power District here. Shrock is considering the continued operation of the ice plant.

Scottsbluff, Neb.—The W & W Ice Co. on the Scottsbluff-Gering highway was recently sold for $133,000, according to R. E. Witt of Scottsbluff. The new owners are members of the Scottsbluff Ice & Storage Co. a partnership. Kenneth Wolcott, one of the partners, said that the company plans to complete the construction on the property which was begun over a year ago. He said that when plans are completed the company will have space for the storage of 50 to 60 carloads of merchandise. This commercial storage will include freezer, cooler and dry storage, he said. Construction is expected to be completed by early spring. Witt also sold his old ice plant property on South Broadway for an undisclosed sum to the Worthington Ice Co. of Worthington, Minn.

Kellie Heads REMA Section

AT the last meeting of the Flow Control Valve Section of the Refrigeration Equipment Manufacturers Association, Edward Kellie, president of Aminco Refrigeration Products Company, Detroit, Michigan, was elected Chairman. The group discussed at length the questions of establishing industry statistics and the matter of standards on flow control valves.

Mr. Kellie said their discussions were based primarily upon the advancement of the industry on a cooperative basis with a definite effort on the part of all members of the Flow Control Valve Section to work towards a reasonable standardization with as little disruption as possible.

ASHVE Annual Meeting

THE American Society of Heating and Ventilating Engineers at the 55th annual meeting held at the Hotel Stevens, Chicago, January 25, 1949, elected as its president Alfred E. Stacy, Jr., director of application engineering, Carrier Corp., Syracuse, N. Y. Other officers elected were: First vice-president, Lester T. Avery, president of the Avery Engineering Co., Cleveland; second vice-president, Lauren E. Seeley, dean of the College of Technology, University of New Hampshire, Durham, N. H.; treasurer, Ernest Szekely, president of Bayley Blower Co., Milwaukee. Wis. Installation of officers was held January 27, last day of the four day meeting.

Natural Ice

Laramie, Wyo.—Approximately 200 men were employed by the Pacific Fruit Express icehouse here for the firm's annual ice harvest which got underway December 10. Homer Whitlock is supervisor of the project.

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Between the two coils is the "Oilout"*, which purges the system of crankcase oil and dirt, keeps it always at full capacity.

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Niagara Aeropass design results from over fifteen years' experience condensing by air. It is completely trustworthy for year' round operation. Users say, "It saves half the difficulties and labor of running a refrigeration plant."

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COMING CONVENTIONS

MICHIGAN ICE INDUSTRIES ASSOCIATION
March 3-4, 1949
Hayes Hotel, Jackson, Mich.
Wm. J. Campbell, Secretary

NORTH CAROLINA ICE ASSOCIATION
March 6-8, 1949
Sheraton Hotel, High Point, N. C.
Lewis H. Powell, Secretary

CANADIAN ASSOCIATION OF ICE INDUSTRIES
March 8-9, 1949
Hotel Vancouver, Vancouver, B.C., Canada
K. C. McCrea, Secretary

NATIONAL ASSOCIATION OF FROZEN FOOD PACKERS
March 6-10, 1949
Stevens Hotel, Chicago, Ill.
F. J. Becker, President

NORTHWEST ASSOCIATION OF ICE INDUSTRIES
March 15-16, 1949
Davenport Hotel, Spokane, Wash.
D. D. Stewart, Secretary

CALIFORNIA ASSOCIATION OF ICE INDUSTRIES
March 21-23, 1949
Biltmore Hotel, Los Angeles, Calif.
Leon A. Bailey, Secretary

MOUNTAIN STATES ASSOCIATION OF ICE INDUSTRIES
March 25-26, 1949
Antlers Hotel, Colorado Springs, Colo.
J. Reimer Espy, Secretary.

EASTERN STATES ICE ASSOCIATION
March 31-April 1, 1949
Hotel Haddon Hall, Atlantic City, N. J.
Samuel Freer, Secretary-treasurer

VIRGINIA ICE MANUFACTURERS' ASSOCIATION
March 31-April 1, 1949
Haddon Hall, Atlantic City, N. J.
H. H. Snyder, Secretary

INDIANA ASSOCIATION OF ICE INDUSTRIES
April 12-13-14, 1949
French Lick Springs Hotel, French Lick, Ind.
O. P. Fauchier, Secretary

Research Staff Adds New Members

EIGHT additional food and container research and development scientists and technologists have been added to the tsaff of the Quartermaster Food and Container Institute for the Armed Forces, Chicago. Assignment of the new personnel was announced by Dr. Howard D. Lightbody, Director of Food Laboratories and Albert V. Grundy, Chief of the Container Development Division.

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Paul F. Hoff, Secretary, 1300 East Locust St., Milwaukee, Wis.

Fires and Accidents

Wilson, Ark. — Fire destroyed the Delta Ice. Co. plant here January 30. Firemen were hampered in their efforts by zero weather. G. B. Shull, plant manager, was seriously injured when he fell while directing efforts of firemen.

Key West, Fla.—With loss estimated at $100,000, the only ice factory in the city of Key West was destroyed by fire February 4. Norberg Thompson, owner of the plant, said the loss was partially covered by insurance. The plant was the only one of its kind in the county, using sea water entirely. Valuable machinery for purifying and freezing the sea water was destroyed.

University City, Mo.—Fire, believed to have started in a salamander stove in the basement, caused damage estimated at $10,000, January 6 in an ice storage plant of the City Ice & Fuel Co., 1564 North and South Road.

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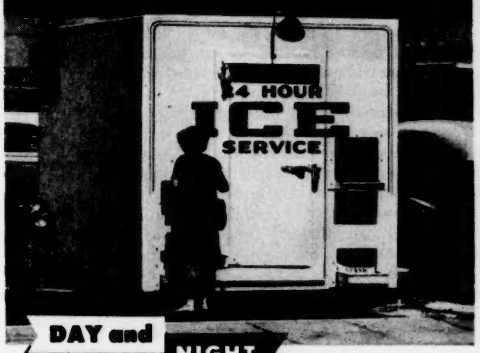
THAT TAKES 5 TONS
OF ICE EACH DELIVERY



DAY and NIGHT

S&S *Automatic-electric*

Ice Vending Stations

Build profits for you!

Could you use a few cash customers who take 5 tons of ice at a delivery? Of course you could . . . who in the ice business couldn't? S & S Automatic Ice Vending stations do just that. Service them with 5 tons of processed and block ice, and let them handle the retail sales automatically.

DON'T LET THE SALES GO BY!

Put S & S Automatic Ice Vending Stations to work for you in marginal areas where route deliveries are unprofitable. They'll take care of your ice customers and do it profitably for *you*! S & S stations will pay themselves out with handsome profits as supplements to your delivery routes without detracting from the routes. Operators say that one well located S & S station will do more business than a good residential route . . . yet one man with a truck can service four stations.

WRITE DEPT. I today for *your* S & S automatic Vender and Station catalogs just off the press. Learn how automatic venders can help you merchandise *MORE ICE.*

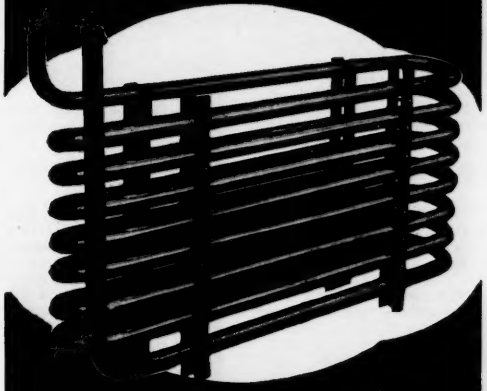
S & S
STURDI-BUILT
ICE VENDING STATIONS

S:S VENDING MACHINE CO.
670 Lincoln Avenue
San Jose, California

F. B. DICKINSON & CO.
Highland Park Station
Des Moines, Iowa

Coils

Smooth Bends
Perfect Welds
Exact Measurements



For over sixty years, the National Pipe Bending Coils have proved their quality in Ice and Refrigeration plants

NEW PLANTS AND IMPROVEMENTS

Information pertaining to proposed new plants, utilizing refrigerating equipment, as well as additions, improvements, and rehabilitation of existing plants. News items of such new plants and additions is invited for publication in this department.

GEORGIA

Fitzgerald, Ga. — The Fitzgerald Ice Co. has secured a location at the Atlantic Coast Line shops to build a new $150,000 ice plant and cold storage warehouse. The plant will be erected as soon as necessary materials can be obtained.

INDIANA

Terre Haute, Ind.—Vigo Ice & Cold Storage Co. has just completed the installation of two Sturdy-Built S & S automatic ice vending stations. The units are designed to dispense 25 lb., 50 lb. and 10 lb. package ice sales.

MASSACHUSETTS

Chicopee, Mass.—The Pioneer Valley Refrigerated Warehouse Company's addition, recently completed, cost $8,000

Danvers, Mass.—The plant of the Danvers Cold Storage Co. has been expanded at a cost of $5,000.

New Bedford, Mass.—L. S. Eldridge & Sons, Inc., has constructed an addition to its ice plant costing $20,000.

Quincy, Mass.—Approximately $30,000 was expended on an addition to the Granite City Cold Storage Co.

Somerville, Mass.—A cooler room for meat packing costing $6,500 was recently added to the M. & M. Mades Co. Inc. plant.

MINNESOTA

Minneapolis, Minn.—Cedar Sanitary Ice Co. has installed another S & S automatic ice vending station.

NEW YORK

Canandaigua, N. Y.—The Lake Canandaigua Ice Co. last month installed S & S automatic 24-hour ice vending equipment.

OHIO

Columbus, Ohio—The Columbus Refrigeration Co., 352 N. High St., has been awarded a $25,193 contract for refrigerating equipment to be installed in the new Central Service building cold storage plant at Ohio State University. The Central Service building will have 12 large cold storage rooms and zero degree freezer rooms for the storage of meats, vegetables, etc., served on the campus. The company will install four York Freon Condensing Units, 22 blower type cooling units, two water cooling towers and all automatic controls.

New Incorporations

Mobile, Ala.—A. A. Richards and Co. has filed articles of incorporation to carry on a storage, quick freezing and merchandising business. Authorized capital stock was listed at $20,000. The following were listed as officers: president, A. A. Richards; vice-president, Amon J. Richards; secretary-treasurer, Ralph A. Richards.

Little Rock, Ark.—Articles of Incorporation have been filed for M. B. Morgan Ice Co., Little Rock, with Lee Miles as resident agent. Authorized capital stock, 4,000 shares at $25 par value each, business to begin with $35,000. Incorporators: M. B. Morgan, Ava Morgan, Lee Miles, all of Little Rock; and Mrs. Minnie Brandon, El Dorado.

Nashville, Tenn.—The Askew Brokerage Co., 1217 First Ave. N. has been granted a charter of incorporation at an authorized maximum capital of $100,000. Incorporators were Helen Hutchinson, Wm. H. Crabtree and Tyree B. Harris. They will operate a processing plant with quick freezing and canning.

OBITUARY

William C. Cassens, Deceased

THE death of William C. Cassens, St. Louis, Mo., formerly with the St. Louis Refrigerating & Cold Storage Co., occurred January 15 as a result of an automobile accident. He was found dead near his overturned automobile on Hanley Road, south of St. Charles road early in the morning. He was 53 years old.

No witnesses of the accident were found. Deputy sheriffs reported that he apparently lost control of his automobile at a point where the pavement was slippery because of mud which had been deposited by trucks engaged in a subdivision construction project. He was pronounced dead at St. Louis County Hospital.

Mr. Cassens formerly was president of the St. Louis Refrigerating & Cold Storage Co. until it was purchased by the Merchants Refrigerating Co. He joined that company in 1913. He served in World War I and returned to the company. He was vice-president for a number of years until the president, R. J. Switzler died in January 1945. He was elected president in June 1945 and served in that capacity until the company was dissolved on December 31, 1947 and its operations taken over by Merchants Refrigerating Co. of 17 Varick St. New York City. He was elected a vice-president of Merchants Refrigerating Co. and served in that position until he resigned in May, 1948.

During November 1948, he became associated with Tom May, Jr. and a company was formed under the name of Tom May, Jr., Co., doing a brokerage business in food products. He was a member of the Missouri Athletic Club and had belonged to the Rotary Club for a number of years.

Surviving are his widow, Mrs. Margaret Cassens and two daughters, Mrs. Paul H. Kummer and Mrs. James L. Kent.

Morris W. Bennett Deceased

THE death of Morris W. Bennett, treasurer and director of the Terminal Refrigerating and Warehousing Corp., Washington, D. C., occurred Saturday, January 15, at Arlington Hospital, Washington, D. C. He was 50 years old.

Mr. Bennett had been an active member of the Eastern States Ice Association since its organization in 1932. He served as vice-president and director of this organization for ten years and was also a director of the Virginia Ice Manufacturers Association. He always took an active part in the affairs of both these associations and recently was a member of the convention program committee of the Eastern States Ice Association, having attended a meeting of that committee in Philadelphia four days before his death. He was also a vice-president of the Consolidated Terminal Corp.

Surviving are his widow, Mrs. Elsie C. Bennett; a son, Morris W. Bennett, Jr., and a daughter, Norma.

Chas. H. Behre, Deceased

THE death of Chas. H. Behre, Sr., president of the Pelican Ice & Cold Storage Co., New Orleans, La., occurred February 13. Mr. Behre, who was 88 years old, was well known throughout the ice industry and was for many years an active member of the National Association of Ice Industries. A more complete obituary notice will be published in the April Issue.

form-fitting OZITE

Standard Low Temperature INSULATING FELT

STOPS HEAT PENETRATION

No bend is too intricate, no elbow too large, no form too complex for flexible, form-fitting *Ozite* Insulating Felt. Easily applied to all pipes, ducts, and other exposed areas, it can be cut to fit any shape snugly and meshes at joints to form a permanent heat seal.

Ozite Insulating Felt gives highest resistance to heat penetration, retains its efficiency and permanency in the presence of moisture and other adverse conditions and requires no servicing.

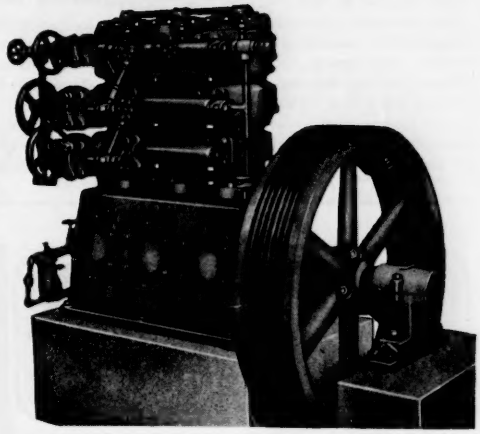
WRITE FOR COMPLETE INFORMATION

AMERICAN HAIR & FELT COMPANY
Dept. L93 Merchandise Mart, Chicago 54, Illinois

HAIR IS NATURE'S OWN INSULATION
It's nature's protective covering for animal life it's a barrier against extreme outside temperature changes. HAIRINSUL is made of animal hair the best reasons why HAIRINSUL is accepted as the finest of insulating materials for refrigerator cars.

HOWE

TO CUT REFRIGERATION COSTS TO THE BONE



ONE BASIC IDEA—SAVINGS FOR YOU!

For your utmost economy, Howe machinery is scientifically designed to insure, day in and day out, *exact temperature and humidity control.* Moreover, out of 37 years of specialization Howe can design or redesign your entire refrigeration layout to provide the *maximum in efficient, low-cost operation.* The world over, Howe's exclusive job-proved advantages are cutting refrigeration costs. Remember, temperature control is product quality control! Consult Howe engineers about your problems!

Since 1912 builders exclusively of ammonia and Freon compressors, condensers, coolers, fin coils, locker freezing units, air conditioning (cooling) equipment. Immediate delivery!

HOWE ICE MACHINE CO.

Distributors In Principal Cities
2829 MONTROSE AVENUE
Cable Address: Himco, Chicago
CHICAGO 18, ILLINOIS

Available: A few choice territories for new distributors. Your inquiry will receive our prompt answer.

John Wesley Strauss, Deceased

THE death of John Wesley Strauss of North Manchester, Ind., one of the pioneer ice men of Indiana occurred January 18 at his home in North Manchester, after an illness of six months. He would have been 80 years old next October.

Mr. Strauss had been actively engaged in the ice, coal and feed business in North Manchester for more than 60 years. He began his business career as an apprentice in his father's flour and feed mill in North Manchester at the age of 16. About 1888 he and his brother took over the mill but by the turn of the century, he became inactive at the feed mill and went into the saw mill and lumber business. He then added wood, coal and ice and as the timber resources of the community declined, he devoted more and more time to the ice, coal and feed business.

He was also interested in other industries including the Hoosier Skirt factory and was a backer of a local monument works. The present store of J. W. Strauss & Son, Arden Strauss having entered the business in 1914, was built in 1882.

But it was in the ice business that Mr. Strauss became better known throughout his community and the State and he saw the ice industry developed from crude beginnings of the early days to the present. He originally harvested ice from the river, lakes and ponds near North Manchester, then as manufactured ice came into the picture, he began to purchase ice from ice manufacturers operating plants near North Manchester. He was for many years an active member of the Indiana Association of Ice Industries and of the National Association.

His son, D. Arden Strauss, who grew up in the business with his father will continue its operation as he has done for the last several years.

JOHN M. WILSON, vice president of the Columbia Ice and Storage Co., Columbia, Mo., died January 28 at the Boone County Hospital. Mr. Wilson had been in ill health for six months. He became associated with the Columbia Ice & Storage Co. soon after moving to Columbia from St. Louis in 1926.

WILL J. WILSON, president of the Flora Ice, Coal and Lumber Co., Flora, Miss., died at the age of 46 at a Jackson hospital, January 31, 1949. He was a well known businessman, having large interests in various businesses in Flora.

NEW AND IMPROVED EQUIPMENT

MACHINERY-APPLIANCES-PROCESSES

Information contained in this department is furnished by the manufacturer of the article described and is not to be construed as the opinion of the Editor.

New Ice Corsage Case

A NEW refrigerated case has been designed by the Marsh Equipment Co., Burbank, Calif., for use as a corsage case, but it can also be used in restaurants and seafood bars and other stores for display of specialty items. Under the plastic "turret" top is an ice pan which holds 50 lbs., of crushed ice. The bottom of this pan is an open grid with baffles so that the ice serves to refrigerate the display case space below. This case was developed sometime ago and has been going through the process of being tried out in the local market.

Corsage Case Made by Marsh

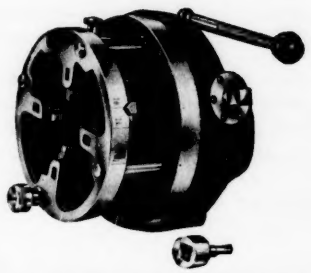
New Plastic Aprons and Sleeves

NEW M.S.A. Chemgard translucent plastic aprons and sleeves for protection against chemicals, greases, dirt, and solvents in the processing industries, industrial plants, mills, and shops, are described in Bulletin No. CZ-2, published by Mine Safety Appliances Co., Pittsburgh, Pa.

Strong, long-wearing, light in weight, M.S.A. Chemgard aprons and sleeves are nonporous, non-absorptive, will not crack or deteriorate at normal working temperatures. Seams are electronically welded and plastic neck and waist straps are permanently sealed to the garment at one end, fitted with adjustable snap fasteners at the other. They are stainproof, odorless and easy to keep clean. Those who are interested may obtain complete details by writing for Bulletin No. CZ-2.

New Portable Power Pipe Threader

A NEW portable power pipe threader has been released by Armstrong Bros. Tool Co., Chicago, Ill. This new power threader is operated by any ½ in. standard electric drill. It threads 1 in., 1¼ in., 1½ in or 2 in. pipe with one set of high speed steel chasers. It weighs only 26 lbs. and one man can carry it from one job to another. The threader is furnished complete with one set of high speed steel chasers and drive adapter.



New Armstrong Portable Power Pipe Threader

A distinct advantage is that it can be operated with full speed and efficiency in out of the way places close to walls, in corners or under limited head room. It operates easily and smoothly and will give trouble-free service because moving parts run on anti-friction bearings.

order ARMOUR ANHYDROUS AMMONIA NOW

Yes, warm weather has a way of creeping up and catching you off-guard. You just can't count on seasons changing according to calendar dates.

So be prepared for rising thermometers. Place your order for Armour's Anhydrous Ammonia *NOW*. Then you'll be ready for any sudden weather change.

Armour's Anhydrous Ammonia is pure and dry, with every cylinder carefully tested for purity. And, remember, Armour makes a "must" of fast shipment. Over 65 conveniently located stock points assure you prompt delivery where you want it, when you want it, and FAST.

Please return empty cylinders

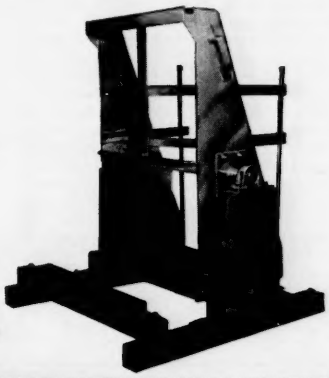
ARMOUR *Ammonia Division*

Armour and Company • 1355 West 31st Street, Chicago 9, Illinois • 2501 83rd Street, North Bergen, New Jersey

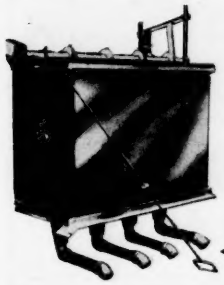
SAVE TIME..SAVE LABOR..SAVE MONEY!

***with* PROPERLY *Designed* RECO EQUIPMENT**

Excess man hours, due to inefficient, worn out, or old-fashioned equipment, cost you money! Expertly designed, flawlessly constructed RECO products are the answer to this thief of your profits. Cut costs as you increase your volume by ordering your new RECO equipment . . . now! Prompt delivery is assured you.



Two Can Sprinkler Type Dumper



Ball Type Can Fillers

NOW! Can Operated Tilting Table Dumpers . . . 6 to 32 Can Capacity.

Greater speed and smoother operation are inevitable when you install this superbly engineered dumper. Construction . . . from finish and supports to body and bearings . . . is typical of the outstanding, careful craftsmanship you expect from all RECO products. Send for data sheets today!

OTHER EQUIPMENT

- Can Fillers
- Vertical Brine Agitators
- Can Dumpers
- Ice Tanks
- Green Oak Framing and Covers
- Shell and Tube Condensers
- Brine Coolers
- Raceway Coils
- Cooling Towers
- Evaporative Condensers
- Receivers, Oil Traps and Purgers
- Air Agitation Equipment
- Ice Handling Equipment
- Gauges and Thermometers
- Ice Crushers
- General Ice Supplies

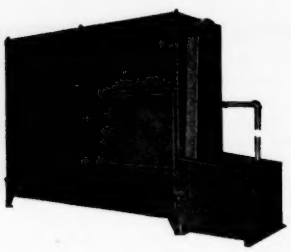
RECO PRODUCTS DIVISION

2020 NAUDAIN STREET, PHILA. 46, PA., U. S. A.

MANUFACTURERS' NEWS

New Line of Evaporative Condensers

A LINE of evaporative condensers in a range of 3 to 50 tons (duplexed to 100 tons) has been placed on the market by the Kennard Corporation, 1819 S. Hanley Road, St. Louis 17, Mo. Many improvements in design and fabrication are claimed for these units and complete details on them may be obtained by writing to the manufacturer.



New Kennard Evaporative Condenser

Featured improvements in the line designed alike for greater durability and performance plus easier servicing of the units include: (1) Penta-Post frame members so designed as to make possible multiple service and access to panels in the welded frame assembly (2) All prime surface coils with copper tubes hydraulically expanded at 3000 psi into copper tube sheets with ferrule-collars. Vibration failures at tube and tube sheet junction avoided. Brazing scale is loosened by hydraulic stretching and blown out of coil thereby safeguarding compressor against scoring. (3) For ammonia hot-dipped galvanized steel coil assemblies. (4) Hot-dipped galvanized sump pan, blower and coil frame sections, wheels and scrolls. (5) Copper spray headers. (6) Heavy steel coil side frames, galvanized after fabrication.

Ward Announces Sales Program

THE Ward Refrigerator & Manufacturing Co., Los Angeles, Calif., announces a complete sales program with additions to the sales personnel covering all sections of the country according to Gordon H. Fitch, promotional sales manager.

Joe Milton who was with Cooleratator for many years will cover the Texas territory.

Frank Ostermueller, also well known in the ice industry, will cover Arkansas, Louisiana and Mississippi.

Arnold N. Schwab will cover Oklahoma, Tennessee, Alabama, Georgia, Florida, Kansas and Missouri.

Stanley Smith will cover Washington, Oregon and Idaho.

Jack Bodie and Jock Shrote will cover Southern California, Southern Nevada, Utah, Arizona, New Mexico, Colorado and El Paso, Texas.

Harold J. Kelley who lives in San Francisco and who has been with Ward for many years will represent the company in the northern half of California and the northern half of Nevada.

L. A. Stark, who has also been with the company for many years and who lives in Chicago will continue as representative in the Great Lakes area.

The position of general sales manager of the home office is now filled by Clare Short, and it is expected that his experience in the sales field will enable him to do an outstanding job. Gordon H. Fitch is taking care of the promotional sales manager's duties which embodies all special contracts and promotional work both in the office and in the field. Brent Cochran who for many years was in the ice industry associated with George Steers of Kalamazoo, Mich., has been appointed assistant sales manager.

Pittsburgh Corning New Headquarters

THE home offices of the Pittsburgh Corning Corporation have been transferred from the Pittsburgh Plate Glass Building to 307 Fourth Avenue, Pittsburgh. These larger quarters will enable the firm to better serve buyers of its two products, structural glass blocks and cellular glass insulation.

Pittsburgh Corning was formed in 1937 by the Corning Glass Works and the Pittsburgh Plate Glass Co. The young firm is independently managed, but it has benefited from the research and production "know-how" of Corning and the sales and distribution facilities of Pittsburgh Plate. In recent years it has become less dependent upon its parent companies. Today, the corporation has its own research division, production units, and nationwide sales organization.

Over ten years ago, Pittsburgh Corning pioneered in the field of structural glass blocks for residences and industrial buildings. In 1942, it brought out a new product, Foamglas. This cellular insulating material is a true glass that retains its original insulating efficiency permanently. The company now owns four plants for producing these products and employs about 700 persons. The plants are at Port Allegany, Pa. and Sedalia, Mo.

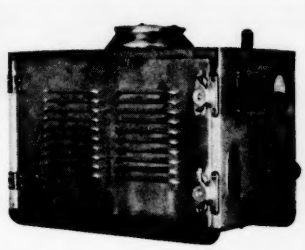
Vilter Moves District Office

The Vilter Manufacturing Co., Milwaukee, Wis., announces the relocation of its Philadelphia, Pa., District Office to Room 315 McClatchy Bldg., 69th and Market Sts., Upper Darby (Phila.) Pa., effective January 15, 1949.

control odors and mold

USE GENERAL OZONE EQUIPMENT wherever eggs, vegetables, cheese, fruits, meats and fish are stored . . then watch food spoilage go down and profits go up.

Let General Ozone engineers solve your odor and mold problems. General Ozone has a complete line of modern ozonizing equipment plus full service facilities for both old and new types. Write us today for further information.



MODEL C-2
Approved by Underwriters' Laboratories, Inc.

GENERAL OZONE CORPORATION
7 West Sixtieth St., New York 23, N. Y. 1455 West Congress St., Chicago 7, Ill.

Manufacturers of ozone generating equipment for cold-storage • warehouses refrigerated cars • walk-in coolers • air recirculating systems • homes • garages • hospitals

FROM PROCESSING TO POINT OF SALE

PALCO INSULATION WOOL PROTECTS FROZEN FOODS

Country Life Frozen Foods central processing plant at Westbury, Long Island, N.Y.

Resilient, non-settling characteristics of PALCO WOOL regardless of vibration conditions make it the ideal insulation for refrigerated trucks.

Huntington Station Branch distribution plant for Country Life Frozen Foods.

To maintain low temperatures in processing plant, refrigerated transfer trucks, and final branch distribution plants, Country Life Frozen Foods, Inc., of Westbury, Long Island, New York, depends upon PALCO WOOL INSULATION. Extremely high thermal efficiency of .255 BTU insures lower operating costs and more perfect product preservation, resulting in higher margin of profit! Write today for your copy of the Frozen Food Locker Plant Plan and Construction Manual.

FLAMEPROOF INSULATION FROM DURABLE REDWOOD BARK

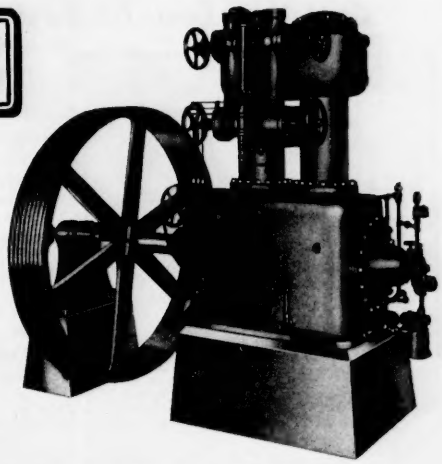
NATURE'S OWN INSULATION FROM THE AGE-OLD REDWOODS

THE PACIFIC LUMBER COMPANY

100 BUSH STREET, SAN FRANCISCO 4, CALIFORNIA

8225 WILSHIRE BLVD., LOS ANGELES 36, CALIF. 35 E. WACKER DRIVE, CHICAGO 1, ILL.

Sterling DEPENDABLE REFRIGERATION



The phrase "STERLING DEPENDABLE REFRIGERATION" is more than a slogan—it's a fact.

Built with rugged strength for endurance, with advanced design for efficiency and economy of operation, STERLING Ammonia Compressors are the product of more than fifty years of "know how" in the manufacturing of refrigeration machinery and equipment.

A complete range of sizes insures the correct compressor for each application.

Deliveries are, at present, reasonably current—some models of compressors are available from stock.

For complete information, see your nearest STERLING distributor, or write the factory.

REYNOLDS MANUFACTURING CO.

SPRINGFIELD *"Builders of Fine Refrigeration Equipment"* **MISSOURI**

Mathieson Purchases Southern Acid & Sulphur

IN a letter to stockholders of Mathieson Chemical Corp., Thomas S. Nichols, president, announced that as a result of negotiations with the directors and principal stockholders of Southern Acid & Sulphur Co., Inc., Mathieson is contracting to purchase the business and assets of that company. Under terms of the agreement, Mathieson will distribute 265,000 shares of its authorized but unissued common stock to the common stockholders of Southern Acid & Sulphur Company, Inc.

Principal business of Southern Acid & Sulphur Co., Inc., is the production and sale of sulphuric acid, ammonium phosphate, ammonium sulphate, phosphoric acid, superphosphates, mixed fertilizers, and sulphur. Acquisition of this company will further diversify the line of basic chemicals now manufactured by Mathieson and will add to its present operations a business that is producing satisfactory earnings, the report to stockholders stated. This extension of the operations of the Mathieson Corporation should substantially enhance its earnings prospects for the future, Mr. Nichols added.

Plants of Southern Acid & Sulphur Company, Inc., are located at Houston, Beaumont, Port Arthur, Tex.; Shreveport, La.; and Little Rock, McKamie, Macedonia, Ark. Net sales of the company totaled $21,800,000 for the twelve months ended December 31, 1948, and resulted in a net profit of approximately $2,620,000.

At the meeting of Mathieson stockholders held in March, 1948, an increase in the common stock of the corporation from 1,000,000 to 1,500,000 shares was authorized for the purpose of providing additional shares to finance the expansion of the corporation. Mr. Nichols pointed out that a major part of this expansion has been accomplished without issuing these shares.

Perfection Increases Capital Stock

HE Perfection Ice Scoring Machine Company, Dallas, Tex., amended its charter January 5, 1949, increasing its capital stock to $100,000.

CATALOGS AND BULLETINS

Manual on V-Belt Drives

THE mechanical goods division, United States Rubber Co. has published a 100-page manual to assist engineers in designing both multiple and light duty V-belt drives. The manual contains a comprehensive set of drive tables for multiple belts; complete sheave data including construction, dimensions, and weights; complete fractional horsepower drive layouts; comparison tables with information on quarter turn drives and hexagon double V-drives. Detailed information on U. S. Royal super-service V-belts, U. S. Rainbow steel cord belts, standard U. S. Rainbow V-belts with equatensil cord section is also contained in the manual, a copy of which will be mailed upon request.

MARTOCELLO ICE PICKS

"Cost You Less To Buy The Best"

Immediate Delivery on Plain Handle Ice Picks

BLADES

of High Carbon Tool Steel, accurately tempered to give you maximum use.

HANDLES

of Sound, Clear Hard Wood with Protective Flexible Lacquer Coating.

FERRULES

of Pressed Steel securely registered on Handle and Plated to Resist Corrosion.

PRICES ON PLAIN AND PRINTED HANDLES HAVE BEEN REDUCED! WRITE TODAY FOR NEW PRICES.

Jos. A. Martocello & Co. 229-231 NORTH 13th STREET PHILADELPHIA 7, PA.

"Serving the Ice Industry Since 1916" *"There is no Substitute for* MARTOCELLO QUALITY"

New Bulletin on Fork Lift Trucks

THE new Material Handling News issued by Clark Equipment Co., while concerned mainly with its publisher's product, actually achieves objectivity in that it portrays in the language of the laymen what fork-lift truck is designed to do, the comparative turning radius of solid-tired and pneumatic-tired machines, the principles of counterweighting, how turning radius affects maneuverability, and other basic factors that every fork-lift truck user, and prospect, should know. Concise but constructive recommendations are made concerning determination of which power type gas-or electric battery-powered is better suited to any specific operation or installation.

Pictorially and by written word the fork trucks are literally taken apart and put together again in this new publication, so that the reader may enjoy a comprehensive appreciation of what goes into them from drawing boards in the engineering department to inspection of the finished product coming off the assembly line.

A copy of this publication will be mailed promptly upon receipt of a request for it addressed to the Clark Equipment Company, Industrial Truck Division, Battle Creek, Michigan.

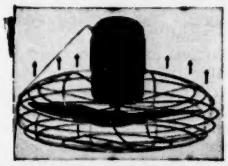
PITTSBURGH
Air Pressure Tested COILS

Electrically welded, continuous; Air-Pressure-Tested while submerged in water. Built to your specifications. Send for new Coil Data Book and let us quote.

Welded Headers—Welded Ammonia Receivers
Accumulators—Pipe Coils—Bends—Boilers Tubes

Pittsburgh Pipe Coil & Bending Company
61 BRIDGE STREET ETNA, PITTSBURGH 23, PA

THE FAN THAT BLOWS *upwards*



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TRUCK MODEL—GAS ENGINE DRIVEN

Model WP-92

INCREASE YOUR PROFITS BY DELIVERING FRESHLY BROKEN ICE IN SIZES FOR ALL NEEDS RIGHT AT THE DOOR

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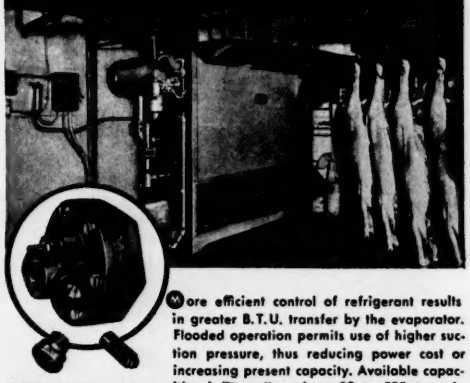

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For Refrigeration and Air Conditioning

A Book Written for the Engineer

The author, a man well versed in the construction and operation of ice making and refrigerating systems, has intended this work as a practical help to the engineer in his every day problems.

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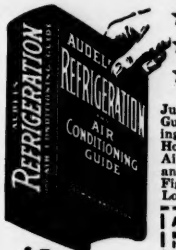

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Handbook on Insulation Values

ARCHITECTS and engineers designing air conditioning and refrigeration projects will find valuable use for a new handbook of insulation values now being distributed by Silvercote Products, Inc., of Chicago, manufacturers of reflective insulation materials.

One of the book's unique features is that for the first time in the history of such publications, it includes both winter and summer insulation values, technically known as "U" values.

The 108-page book lists 12,852 certified F.H.A. approved "U" values of various walls, floors and ceilings. The coefficients shown in the book were calculated in accordance with F.H.A. calculation procedure, according to Warren Knudson, vice president of Silvercote, who prepared the book. A graduate of Armour Institute of Technology and at one time associated with the U. S. Bureau of Standards, Knudson is a recognized authority on reflective insulation.

Illustrating the book are 238 drawings showing typical wall, floor and ceiling sections. The drawings illustrate the proper position of the insulation to obtain stated "U" values.

Copies of the new handbook may be obtained free of charge by qualified architects, engineers, and builders, by writing to Silvercote Products, Inc., 161 East Erie St. Chicago 11, Illinois.

U. P. Issues Memo On Increased Rates

NOW in the course of preparation by Union Pacific Railroad is Supplement I to "Memorandum of Increased Rates and Charges", which will reflect changes and additions occasioned by the issuance of the New Composite Master Tariff X-162-B and X-166-0, effective February 15.

This supplement will show increases authorized in Tariff of Emergency Charges X-168, effective January 11, 1949. It will also contain increase table reflecting 4, 5 and 6 per cent increase to total freight charges of 1 cent to $1,000, including a 3 per cent table for figuring the Federal Transportation Tax.

Distribution of the original 62-page booklet simplifying the checking of rates has met with enthusiasm by shippers and traffic men, and this first supplement is designed to keep the booklet current and complete.

Copies of the supplement may be obtained free of charge from W. T. Burns, general freight traffic manager, Union Pacific Railroad at Omaha, or a local representative of the Union Pacific.

Engineering Data Booklet

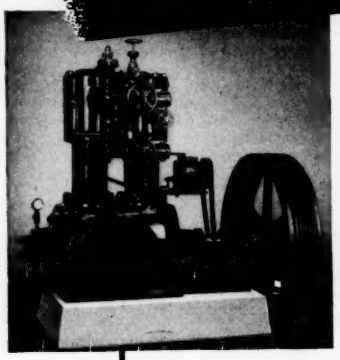
THE publication of a condensed engineering data book to aid salesmen and service contractors in figuring heat load has been announced by the Betz Corp., Hammond, Ind. The text is brief and intended for use by those who already understand the principles of modern refrigeration. Subject matter is confined to figuring all heat loads and the proper applications of force convection units. Included are selector tables giving calculated heat loads at specified conditions for stock size walk-in coolers, reach-in refrigerators and dry beverage boxes.

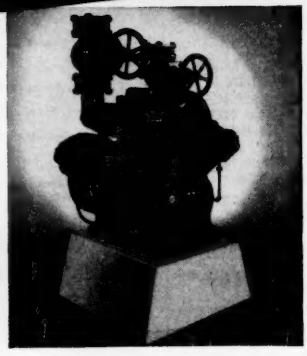
Bulletin on Hi-Peak Coolers

A new catalog illustrating and describing their "Hi-Peak" coolers has been issued by Acme Industries, Inc., Jackson, Mich. These coolers, the bulletin states, are especially designed for applications requiring instantaneous, convenient, high speed delivery of cool water; their large capacity assuring a reserve volume of pre-cooled water on hand. Various details of the device are illustrated and explained in pictures and tables. Copies may be obtained by writing Acme Industries, Inc.

BEFORE YOU INVEST IN REFRIGERATION EQUIPMENT INVESTIGATE

Ammonia Compressors and Boosters





For more than half a century, CP Refrigeration has stood for dependable, economical performance.

CP Engineers, backed by an extensive line of Vertical two-cylinder Compressors, Self-contained Marine Units, and Multi-cylinder Compressors and Boosters, are especially qualified to cooperate in planning refrigeration systems for a wide variety of services. A nation-wide CP organization gives owners of CP Refrigeration Equipment the important advantage of one source of complete supply and service.

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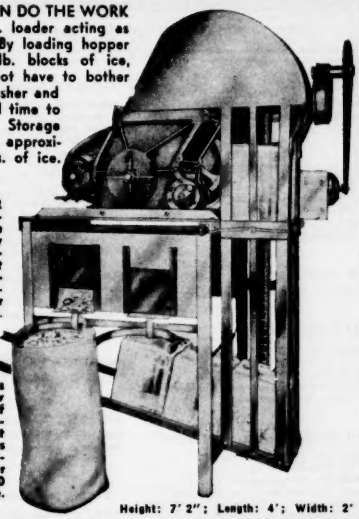
NEW AUTOMATIC *Bateman* LOADER CRUSHER *Saves* TIME AND LABOR

ONE MAN CAN DO THE WORK OF TWO . . . loader acting as second man. By loading hopper slide with 50-lb. blocks of ice, operator will not have to bother loading the crusher and can devote full time to bagging ice. Storage bin will hold approximately 100 lbs. of ice.



The CRUSHER has five adjustments on the grate which, by turning a handle on the front of machine, operator can adjust for proper size ice desired.

ELEVATOR is timed to allow each block of ice to be crushed before next block enters crusher. Capacity of Loader Crusher . . . 200 lbs. per minute.

Height: 7' 2"; Length: 4'; Width: 2'

All Inquiries Answered Promptly.

COMPLETE UNIT, less Crusher Motor $650.00
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Any Bateman Model 50 crusher can be installed on this unit.

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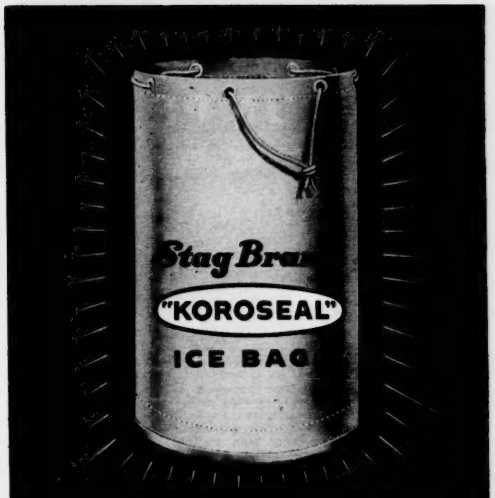

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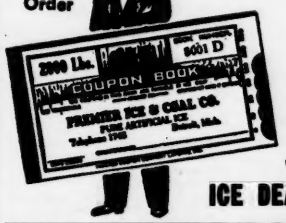

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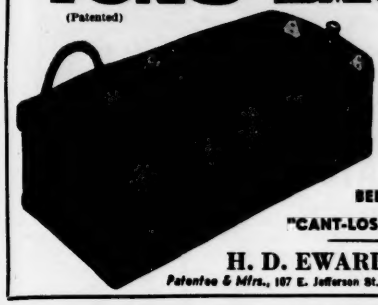
(Patented)



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Capacities to 500 G.P.M. • Heads to 200 ft.

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AURORA CENTRIFUGALS *for Every Pumping Job*
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VERTICAL
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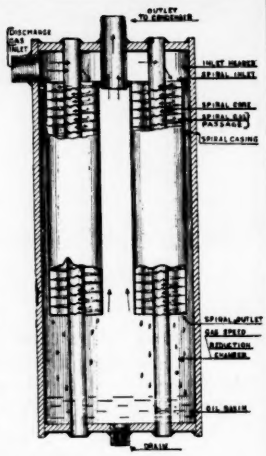
Allows operation as was originally intended. Simple in operation — no parts to wear out — no screens, metal wool or any close screens to clog, raise discharge pressures and cut down capacity.

When used in connection with air compressors, water is also separated with the oil.



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Vogt, Machine Co., Henry, Louisville, Ky.

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Martocello & Co., Jos. A., Philadelphia, Pa.
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AIR COMPRESSORS
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Vogt Machine Co., Henry, Louisville, Ky.

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DIRECTORY

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(See Air Compressors)

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AMMONIA

Est 1858

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HENRY BOWER CHEMICAL MANUFACTURING COMPANY
29th & GRAY'S FERRY ROAD
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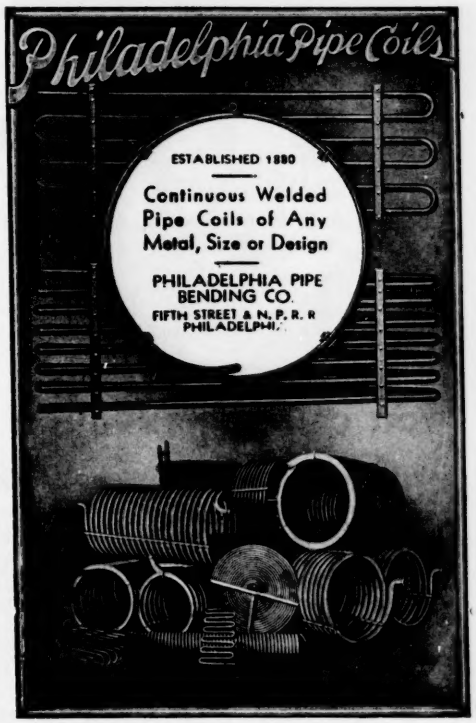
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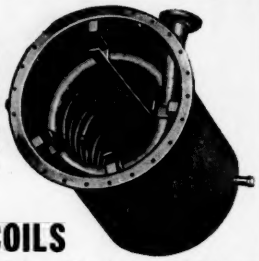

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Coils, Bends, Tank and Coil Assemblies for Ice and Refrigeration Plants, Cold Storage Houses, all types of industry—all purposes.

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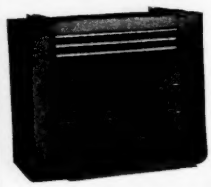

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for low temperature cooling

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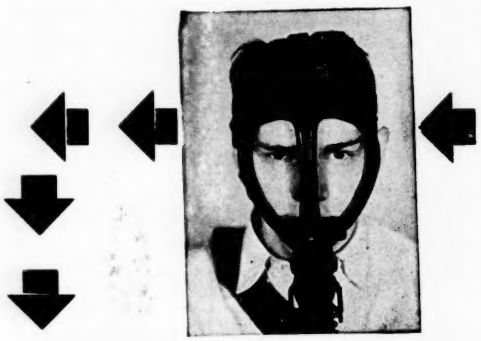

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For protection against ammonia and other gases, it will pay you to specify Acme. Here is the *one* gas mask that gives you full vision . . . up, down and to either side. This means greater safety and confidence to workmen. Acme's exclusive Dead Air Check Valve limits the amount of carbon dioxide the wearer rebreathes. Acme canisters give dependable protection against ammonia and other gases.

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THE BUYERS

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Refrigeration Engineering Corp., Philadelphia, Pa.
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Lilly Co., The, Memphis, Tenn.

ENGINEERS AND ARCHITECTS
(See Architects and Engineers)

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Caterpillar Tractor Co., Peoria, Ill.
Frick Co., Waynesboro, Pa.

EVAPORATIVE CONDENSERS
Niagara Blower Co., New York, N.Y.

EVAPORATORS
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Creamery Package Mfg. Co., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Niagara Blower Co., New York, N.Y.
Vogt Machine Co., Henry, Louisville, Ky.

FEED-WATER HEATERS
National Pipe Bending Co., New Haven, Conn.
Vogt Machine Co., Henry, Louisville, Ky.

FIBERGLAS
Armstrong Cork Co., Lancaster, Pa.

FIELD ICE SAWS
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United Ice Supply Co., Boston, Mass.

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Frick Co., Waynesboro, Pa.
Martocello & Co., Jos. A., Philadelphia, Pa.

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Howe Ice Machine Co., Chicago, Ill.
Rempe Company, Chicago, Ill.

FIRST AID SUPPLIES
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Worthington Pump and Machinery Corp., Harrison, N. J.

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Frick Co., Waynesboro, Pa.
Knickerbocker Stamping Co., Parkersburg, W. Va.
Rempe Company, Chicago, Ill.

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Worthington Pump and Machinery Corp., Harrison, N. J.

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Thomas Truck and Caster Co., Keokuk, Iowa

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ICE BLOWERS
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Refrigeration Engineering Corp., Philadelphia, Pa.
United Ice Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

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Thermo Cuber Co., Chicago, Ill.

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Acme Protection Equipment Co., Chicago, Ill.

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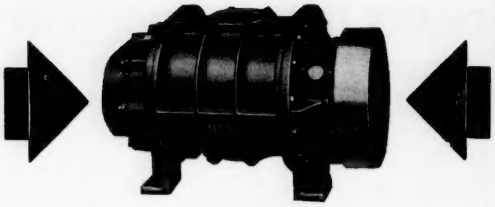

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That's important in ice-plant operation. Failure of your air supply means loss of production—loss of income—loss of profit.

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One of the Dresser Industries

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AIR CONDITIONING AND REFRIGERATION
in Freon and Ammonia

EXPERT ENGINEERING ALWAYS AVAILABLE FOR CONSULTATION

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King-Zeero Company, Chicago, Ill.

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Worthington Pump and Machinery Corp., Harrison, N. J.

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United Ice Supply Co., Boston, Mass.

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Vogt Machine Co., Henry, Louisville, Ky.

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Refrigeration Engineering Corp., Philadelphia, Pa.
Spraying Systems Co., Chicago, Ill.

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Mortocello & Co., Jos. A., Philadelphia, Pa.
Refrigeration Engineering Corp., Philadelphia, Pa.

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Niagara Blower Co., New York, N.Y.

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WATER SUPPLY CONTRACTORS
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WATER TREATMENT MATERIALS
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Philadelphia Pipe Bending Co., Philadelphia, Pa.
Pittsburgh Pipe Coil & Bending Co., Pittsburgh, Pa.
Rempe Company, Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.

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Layne & Bowler, Inc., Memphis, Tenn.

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Byers Co., A. M., Pittsburgh, Pa.

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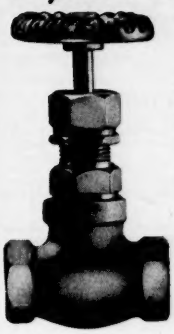
1—Creasy Ice Breaker 3 ton capacity per hour, pulley drive.
1—Creasy Ice Breaker complete with motor 10 to 12 ton capacity per hour.

For Prices, Write to Box MR-12
ICE & REFRIGERATION, 433 N. Waller Ave.
Chicago 44, Ill.

SHANK REFRIGERATION PRODUCTS

A good Valve-Saves a lot of trouble!



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Highest grade non-porous metal—full size ports—clean cut threads. Back seated stem — Shank design base — perfect alignment. Long life packing ring.

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Compact — Machined from bar stock steel — Full size ports — Completely rust-proofed — Highest grade graphited composition packing. All popular sizes.

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All classified advertisements are payable in advance. Except for Positions and Help Wanted classifications, this section is reserved exclusively for the purchase and sale of USED equipment, existing and used plants, and surplus material. Rates: $3.50 for 50 words or less; 60c for each additional 10 words or fraction thereof; 75c per line for bold face headings; $9.00 per inch for ads all set in bold face type or listing items on separate lines.

POSITIONS AND HELP WANTED

POSITION WANTED—As Operating Engineer or Chief Engineer. Applicant is 50 years of age, sober and has had extensive experience in ice, cold storage and locker plants. Written recommendation will be furnished on request. Thomas A. McKinstry, 102 W. Sahwaro St., Tucson, Ariz.

WAREHOUSE EXECUTIVE—with thorough experience in refrigerated and general merchandising warehousing, now employed as manager of warehouse, is interested in relocating. Age 48, good health, habits and excellent references. Address Box JA-12, Ice and Refrigeration, 435 N. Waller Ave., Chicago 44, Ill.

POSITION WANTED—As chief engineer of ice and refrigeration. Applicant has thirty years practical experience with technical training, familiar with all standard equipment including steam, electric and Diesel power, low temperature, quick freezing, etc. Will go anywhere. Address Box JA-16, Ice and Refrigeration, 435 N. Waller Ave., Chicago 44, Ill.

WANTED—Manager for 50 ton ice plant with locker storage, located in Southern Michigan—to have full charge of plant operation and delivery service. Give full information as to qualifications. Address Box MR-14, Ice and Refrigeration, 435 N. Waller Ave., Chicago 44, Ill.

ICE PLANTS—*Wanted and For Sale*

FOR SALE—17 ton ice plant, water power driven, located in New Jersey. Supplies entire town, plus surrounding villages and lake regions. Five acre lake included, with possibilities for cabins or bungalow colony. Reason for selling, Uncle Sam requested my services in the U. S. Army. Address Box MR-3, Ice and Refrigeration, 435 N. Waller Ave., Chicago 44, Ill.

CLASSIFIED ADS CONTINUED ON NEXT PAGE

ICE PLANTS—*Wanted and For Sale—Cont.*

WANTED—We are interested in purchasing for cash a 20 to 40 ton raw-water ice plant, complete or near complete, to be moved. Fortson Bros., 115 West 4th Ave., Corsicana, Texas.

FOR SALE—COMPLETE ICE PLANT OR MACHINERY ONLY

An exceptional opportunity to acquire a complete ice plant in a city of 35,000 in upper New York state, Lake Ontario region. Plant now producing 50 tons per day. Equipment includes 2 8x8 York compressors and 1 5x5x. 848 can tank, modern can pulling equipment. Complete sales and production records open for inspection. Will sell machinery separately if desired. Address Box MR-8, Ice and Refrigeration, 435 N. Waller Ave., Chicago 44, Ill.

FOR SALE—NEW ICE PLANT

A plant ordered two years ago now ready for delivery. Location plans changed so desire to sell it. It is a new 15 ton electrically driven raw water ice plant complete. Modern in every respect. Can ship from manufacturer immediately. Has automatic controls, 4 can grid system, storage coils, trunk type tank coils with float control and scoring machine. It can be increased to 20 tons by adding another compressor. If interested in buying the plant, write "The Man with the Extra Ice Plant," Box MR-6, Ice and Refrigeration, 435 N. Waller Ave., Chicago 44, Ill.

FOR SALE—50 ton ice plant with 500 lockers—all or part interest. Located in Southern Michigan vicinity of Detroit. Doing good business at present time and can be expanded. Can be had on reasonable terms with small down payment. Address Box MR-15, Ice and Refrigeration, 435 N. Waller Ave., Chicago 44, Ill.

LIQUIDATING

Large Ice Plant

3 Ingersoll-Rand compressors, 50, 90 and 100 tons, direct connected to synchronous motors. 1 York 6½x6½ high speed compressor. I York 6½x6½ slow speed compressor. 500 ice cans, 300-lb. Large quantity of ammonia pipe with return bends. Electric cranes, pumps, valves, fittings, and high pressure boilers.

H. LOEB & SON

4643 Lancaster Ave. Philadelphia 31, Penna.

USED MACHINERY—*Wanted and For Sale*

WANTED TO BUY—Large quantity of good used ice cans, size 11⅛x 22½x46 inches, inside dimensions. Consumers Ice Company, 701 N. Van Dyke, Decatur, Ill.

WANTED—In the market for any good used refrigerating and ice making equipment you may have for sale. Address Box DC-19, Ice and Refrigeration, 435 N. Waller Ave., Chicago 44, Ill.

FOR SALE—1 York 6"x6" compressor, V-belt and 20 h.p., 3/60/220V motor 15' double pipe condenser, gauges and valves. Consolidated Products Co. Inc., 13-21 Park Row, New York 7, N. Y.

FOR SALE—One 1948 model, size 1, Model D Link Belt ice slinger with 10' hose and swivel nozzle. Never used. Sanitary Dairy Company, Box 125, Muskegon, Mich.

WANTED—10x10 ammonia compressor. Must be in good physical condition. Give location, price in first letter. Hill Packing Company, P. O. Box 148, Topeka, Kansas. Attention Corliss Johnson.

FOR SALE—York compressors, splash lubrication, 9x9, 7½x7½, 5x5, 4x4. Also York 4x4 and Frick 3x3 self-contained units. One 16" x 12 ft. receiver. 1¼" Alco magnetic valves. Write E. Niebling, 1318 St. Clair Ave., Mt. Healthy, Cincinnati 31, Ohio.

FOR SALE—Two deep well water pumps; Sterling 15 h.p., 220-440V; 70 ft. of 6" pipe. Cook 7½ h.p., 220V; 160 ft. of 3" pipe. Also an assortment of DC motors, 110-125V, from 1 h.p. to 20 h.p. Also 2 smoke stacks, 2 years old, 3'x50'. North Pole Ice Co., Clarksburg, W. Va.

FOR SALE—9x18 Vilter H.D.A. compressor and 6½x6½ V.S.A. compressor Brine cooler 36 in. x 12 ft. with 151—2 in. O.D. tubes. 7 shell & tube horizontal single pass condenser 18 ft. x 8 in. each with 7—2 in. O.D. tubes. Bicknell Ice Co., Bicknell, Indiana.

FOR SALE—Natural ice harvesting machinery consisting of two power saws, three hundred lineal feet of sectional conveyors with conveyor chain, etc. With or without Fordson tractor power unit. The Minglewood Coal & Ice Co., Box 204, Wooster, Ohio.

FOR SALE—The following steam pumps: 1 Gardner 8"x7"x10" duplex—300 gal., 1—Worthington 7½"x7"x10" duplex—300 gal., 1—Worthington 7½"x 7½"x6". These pumps were in use until about sixty days ago. Used for circulating brine. They are in useable condition. American Stores Co., Lincoln, Nebr.

FOR SALE—12x12 Frick ammonia compressor direct connected to electric machinery, 100 h.p. sychronous 3 phase, 60 cycle, 2300 volt AC motor, complete with panel board and exciter. Danville Ice Co., Inc., Danville, Virginia.

FOR SALE—To reduce our inventory we are offering for sale: Crankshafts, bearings, wrist pins and bushings, connecting rods—all for York ice machines—all new and in original crates—in sizes from 5x5 to 10x10. Also 4x4 and 5x5 self-contained ammonia condensing units, with motors; one 5x5 high speed compressor; 6x6 and 7x7 ammonia compressors with flywheels, motor sheaves and belts. All brand new. Never used. Wire or write Apfel Engineering Company, P. O. Box 1013, Erie, Penna.

FOR SALE—Boston type ice tongs, 16", 75c each, sample on request. Frick 3x3 self-contained—$350.00. Frick 4x4 self-contained—$500.00. York 4x4—$350.00. York 3x3—$250.00. Excelo 5x5—$250.00. Shell and tube condenser 20'x8"—125.00. Ammonia receiver 18'x8"—$75.00. Other refrigeration equipment and supplies. Motors, all speeds and horse powers, at reduced prices. Write us—we buy, sell and trade. Gordon Equipment So., 6530 W. Jefferson Ave., Detroit 17, Mich.

FOR SALE—RECONDITIONED BUCKEYE DIESELS

60 h.p., 80 h.p., 100 h.p., 112½ h.p., 150 h.p., 225 h.p., 262½ h.p., 300 h.p., Engines, complete with outboard shaft and bearing, silencers, air starting outfit and water pump. Can be supplied with generator or for belt drive. Priced right. Immediate shipment. Write, wire or phone for complete description of the size engine you need. Robert L. Neiswander, 418 S. Pears Ave., Lima, Ohio. Cable address: OHIODIESEL.

FOR SALE—Four Vertical shell and tube ammonia condensers, each 42" dia. x 14' high, with 180—2" dia. x 14'—#10 gauge charcoal iron tubes—with 4" gas, 1½" liquid and 1" equalizer outlets—½" purge valve and ½" pop valve—500# pressure—1260 sq. ft. Were in regular use until replaced recently by evaporative condensers. Address Box MR-10, Ice and Refrigeration, 435 N. Waller Ave., Chicago 44, Ill.

FOR SALE—6x6 Sterling 2 cyl. compressor—20 h.p. motor and starter. 20"x10' shell and tube condenser, oil separator. Water pump and complete evaporator equipment consisting of 3 Peerless blower units with 2 speed motors and 1 set 1¼" coils, 37' long, containing 2000' of pipe. Plant now in operation in first class condition. Equipment 9 years old. Bargain price for complete plant. Contact John A. Rhodes Company, 505 W. Olive, Springfield, Missouri.

FOR SALE—1 York 5x5 self-contained unit complete with 15 h.p. motor. Frick 6x6. York 9x9 with motor. York 1 ton flake ice unit. 150 ton DeLaVergne with Skinner Uniflow steam engine. 10x10 Frick crank shafts, pistons and flywheel. 1 each 150 and 180 h.p. Fairbanks-Morse full Diesel engines. 1 each 40 and 60 KVA generators. 12,000 gallons fuel tank. Freezer doors. 1¼"x5" welds ends return bends, coils, fittings, motors, air compressors. 90 K.W. Erie Ball generator unit. Parke Pettegrew & Son Company, 370 West Broad St., Columbus 8, Ohio.

FOR SALE—USED ICE PLANTS & EQUIPMENT

1—20 ton York ice plant, Diesel driven, herringbone coils, 2 can pull.
1—50 ton York ice plant, electric driven, herringbone coils, 3 can group.
1—10"x10" Duplex direct connected York synchronous motor.
1—10"x10" York ammonia compressor, high speed.
1—6½x6½ two cylinder York high speed ammonia compressor.
1—6x6 two cylinder Frick ammonia compressor, medium speed.
1—6"x6" two cylinder late model H. S. York compressor.
1—6"x6" two cylinder Voss high speed ammonia compressor.
1—5"x5" two cylinder York high speed ammonia compressor.
2—4"x4" two cylinder York high speed ammonia compressors.
1—3"x3" two cylinder Frick unit, high speed.
1—3x3 one cylinder York unit, high speed.
York shell and tube condenser, 28" dia. x 16' L. 51—2" tubes.
1—25" dia. x 10' 0" long 5 pass enclosed type ammonia condenser.
3—16" dia. x 10' 0" long 6 pass enclosed type ammonia condenser.
3—Perfection ice scoring machines 300 lb. to 400 lb. blocks.
1—Hill automatic gas purger.

All makes and types of recording thermometers, shell and tube double pipe condensers (send us your requirements). Brine coolers, double pipe 2" and 2" horizontal brine coolers, submerged shell and tube type. 1¼" and 2" ammonia coils, approximately 6,000'. Electric motors, starters and panel boards, all sizes. Ice cans, agitators, cranes, pumps, low pressure blowers, valves and fittings. Send us your requirements on any equipment you may need.

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All Used Equipment Is Reconditioned in Our Modern Machine Shop

THIS IS ONLY A PARTIAL LIST—WRITE ABOUT ANY REQUIREMENTS WHICH YOU HAVE WE ARE BUYING ADDITIONAL EQUIPMENT ALL OF THE TIME.

Compressors With or Without Motors

ITEM NO.

1—5x5 York, 200 RPM 16
6—6x6 York's, 200 RPM 20
1—6x6 Frick, 257 RPM 21
2—6x6 York's, 400 RPM, forced feed lub 22
2—6½x6½ Arctics, 350 RPM, forced feed lub 30
1—7x7 Frick, 200 RPM 40
1—7½x7½ York, 225 RPM 50
1—7½x7½ York, 200 RPM 51
1—8x8 Arctic, 300 RPM, forced feed lub 60
1—8x8 Frick, 300 RPM, forced feed lub 61
1—9x9 Arctic, 300 RPM, forced feed lub 62
1—9x9 Frick 225 RPM direct connected to a 60 HP synchronous motor, forced feed lubrication 67
1—9x9 Frick, 200 RPM 70
1—9x9 York, 200 RPM 71
1—9x9 Worthington, 325 RPM, forced feed lub 72
1—10x10 De La Vergne, 360 RPM, forced feed lub 73
1—10x10 De LaVergne, 300 RPM, Forced Feed Lubrication 76
1—10x10 York, 257 RPM, forced feed lub 80
1—10x10 Carbondale, 100 HP synch. motor, 350 RPM 81
3—10x10 York's, 225 RPM, semi-forced feed lub 82
1—11x13 York, 164 RPM, forced feed lub 90
1—17x18 Frick, direct conn. 300 HP synch. motor 91

Diesel Driven and Diesel Engines

1—8 x 8 York—Direct connected to 50 H.P. Fairbanks Morse at 257 R.P.M. 210
1—175 H.P. Fairbanks Morse Diesel engine 211
1—150 H.P. Van Severin—300 R.P.M.—Diesel engine 212

Steam Driven

1—18 ton Vertical 6½ x 6½ Arctic 321
1—250 ton Horizontal De La Vergne—18 x 24—with Ames Una Flow engine 325
1—7½ x 7½ Vertical York, 200 R.P.M. direct connected to steam engine 326
1—8 x 8 Vertical York, 300 R.P.M. direct connected 327

Pipe

10,000 feet wrought Iron pipe—2"—like new 451

Scoring Machines

2—Giffords wood 512

ITEM NO.

Complete Ice Plants

1—Perfection 513
1—65-ton York plant, 749 cans 629
1—15-ton electric driven plant 630
1—600 Can Trunk Coil Type—York Plant, Brand New Tank. *Complete with 10 Can Grids. This plant is equal to new* *631*

Brand New 8 to 10-ton Clear Ice-Making Plants—110 Cans—Electric or Diesel Drive—2 Can Pull 632
3—247 Can, 22-ton ice plants, like new 632A
1—15 Ton Diesel Driven Plant 633
1—35 ton electric driven plant—2 can pull 635

Self-Contained Units

2—3 x 3 York & Frick—390 R.P.M. 741
2—4 x 4 Yorks—390 R.P.M. 742
1—5 x 5 York—390 R.P.M. 743
1—4½ x 5 Lipman—360 R.P.M. 744
1—3x3 Worthington 748

Brine Coolers

1—34 x 12— 96—2—Retubed 801
1—34 x 10—100—2 802
1—48"x16'—130—2" tubes 808

Condensers

3—100 ton shell and tube condensers retubed 919
2—Stands—Vogt Multi-tube—Each stand 6 pipes high. Each pipe 9" x 18" with 7—2" tubes 920
1—125-ton, Vertical Shell & Tube, 196 2" tubes 921
1—120 ton, 216—2" retubed Vertical Shell & Tube 922
1—50 ton Horizontal—retubed 923
2—20 ton Horizontal—retubed 924

Ice Cans

96—11½" x 22½" x 46"—Refinished in zinc
400—11½x22½x44" refipished in Zinc.

Motors

1—100 H.P. Westinghouse Motor—V Belt Drive

NEW EQUIPMENT FOR IMMEDIATE DELIVERY

Compressors With or Without Motors

ITEM NO.

6 x 6—350 R.P.M.—V Belt-Wheel 1001
5 x 5—360 R.P.M.—V Belt-Wheel 1002
8 x 8—400 R.P.M.—V Belt-Wheel 1003
5 x 5—Self contained—15 H.P. motor—V Belt 1004

Ammonia Condensers

4—12¾ x 12 Horizontal—36—1¼" tubes 1020
2—30 x 14 Vertical 109—2" tubes 1021
1—16" x 10" x 10' Shell and Tube Condenser, 60 1¼" tubes 1022

Evaporative Condensers

20-40-50 ton condensers 1030

Ice Cans

50—100 lb. cans—15½" x 8" x 31" 1041
40—50 lb. cans—6" x 12" x 26" 1042

Ammonia Valves and Fittings

⅜" to ¾"—Screwed Expansion Valves 1050
½" to 2"—Screwed Globe Valves 1051

ITEM NO.

1" to 6"—Square Flanged Globe Valves 1052
Check Valves 1053
Relief Valves 1054
Strainers 1055
Steel & Malleable Fittings 1056
Extra heavy Ammonia Nipples 1057

Ammonia Gauges

High and Low Pressure Type 1060

Ammonia Receivers

All Sizes.

Ice Crushers

Gas and Electric Driven 1070

Ice Cubers

1—100 lb. Uline Automatic Cuber

Cold Storage Doors
Receivers and Oil Separators

All sizes 1080

Brand new 2 hp. and 3 hp. vertical agitators.

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1. The pipe has first been thoroughly cleaned. Here Armstrong's Waterproof Cement is being applied.

2. Sections of cork covering are tightly butted against each other. Longitudinal joints at top and bottom.

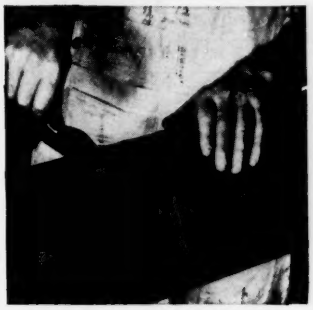
3. The covering must hug the line snugly. It is held in place with copper-clad steel wire, drawn tight.

How to get a good cold line insulation job

The combination of good material and workmen who know how to apply it properly is your best assurance of long and efficient performance from cold line insulation. Workmanship is extremely important, for poorly applied insulation means needless waste of expensive refrigeration. The slightest opening in any joint allows heat to flow in and moisture to condense in the break. If this moisture freezes it exerts a pressure that enlarges the opening and may damage the insulation itself.

Shown here are five of the important steps in doing a good cold line insulation job—a job that with proper maintenance will last for many years and keep cost of refrigeration down. The insulation being used is Armstrong's Cork Covering, a material whose low thermal conductivity and general all-around durability have made it the standard of comparison among cold line insulations. It is being applied by one of the skilled workmen of Armstrong's Contract Service.

For an estimate on the cost of insulating a low-temperature line the way it should be done or for full information on Armstrong's Cork Covering, call the Armstrong District Office nearest you or write direct to Armstrong Cork Company, Building Materials Div., 4503 Concord St., Lancaster, Pa.



4. All joints are carefully pointed up and sealed with Armstrong's Seam Filler to keep out vapor.

5. The completed job gets a good coat of Armstrong's Cork Covering Paint.

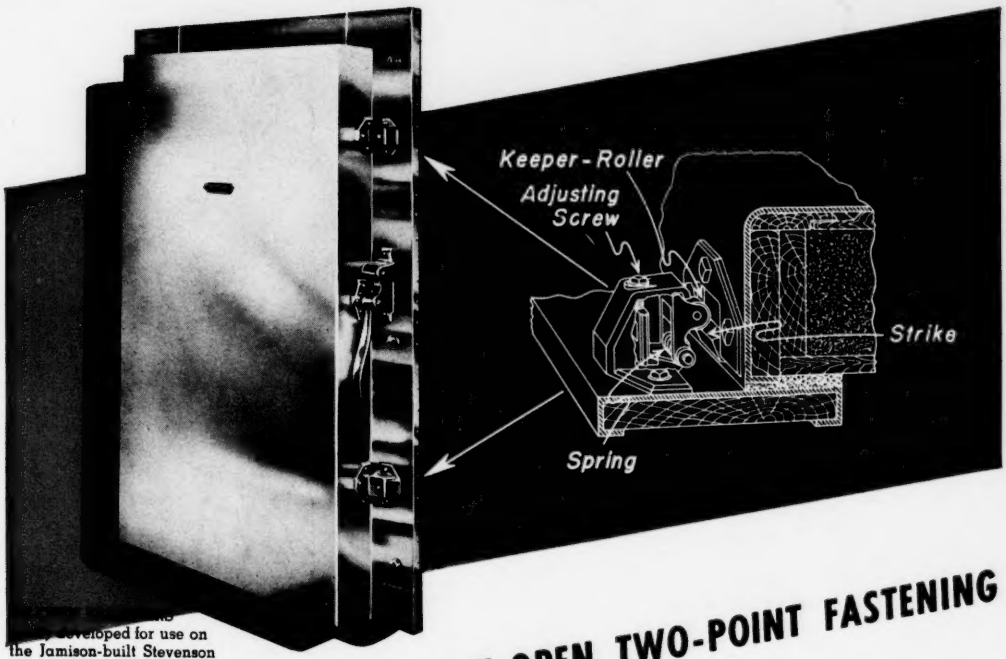
- **DON'T** apply insulation when the line is cold or wet.
- **DON'T** try to save money by using untrained workmen.

ARMSTRONG'S INDUSTRIAL INSULATION

Complete Contract Service
For All Temperatures

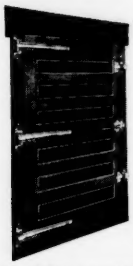
From 300° Below Zero

To 2800° Fahrenheit



...eloped for use on the Jamison-built Stevenson Super-Freezer overlap-type door.

Get a better Seal with ... E-Z-OPEN TWO-POINT FASTENING



Jamison Standard Door equipped with E-Z-OPEN FASTENERS, for moderately low temperatures. (Track Door illustrated)

E-Z-OPEN FASTENERS used on the Jamison Lo-Temp in fitting door for sub-freezing temperatures.

The Jamison patented E-Z-OPEN DOOR FASTENER is of simple design providing for long, trouble-free operation. Installed at the top and bottom of both in-fitting and overlap types of cold storage doors, it maintains positive and uniformly distributed gasket pressure when door is closed.

Only minimum effort is needed to open the door from the inside as well as the outside. Two handle mechanisms operate independently of each other, without a through rod connection.

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Hagerstown, Maryland

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